Vol. 1065 Number 5

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

April 29, 1986

U.S.
DEPARTMENT
OF COMMERCE

Patent
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Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.50 each; PLANT PATENTS in color, $6.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office has been changed as of Feb. 9, 1986 and is announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

International PCT fees have been changed effective Jan. 1, 1986 and were announced in the *Official Gazette* at 1061 O.G. 30 on Dec. 31, 1985.

Note that the amount of the international search fee for the European Patent Office and the amounts of the International PCT fees will change effective June 1, 1986. For information on these fee changes see the notice appearing in the *Official Gazette* at 1065 O.G. 41 on Apr. 29, 1986.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority	
—No corresponding prior U.S. national application filed	420.00
—Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
if paid before June 1, 1986	830.00
if paid on or after June 1, 1986	930.00
International fees	
Basic fee (first 30 pages):	
if paid before June 1, 1986	325.00
if paid on or after June 1, 1986	375.00
Basic Supplemental fee (for each page over 30):	
if paid before June 1, 1986	6.00
if paid on or after June 1, 1986	7.00
Designation fee for the first 10 national or regional offices:	
if paid before June 1, 1986	80.00
if paid on or after June 1, 1986	90.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Mar. 31, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Patent Cooperation Treaty (PCT) Update

Change in international search fee charged by the European Patent Office (EPO) and change in International Fees effective June 1, 1986.

The International Bureau of the World Intellectual Property Organization has informed the US Patent and Trademark Office that, due to the exchange rate of the US dollar with regard to the Deutschmark and the Swiss franc, the dollar amount of the international search fee charged by the European Patent Office and the International Fees for PCT applications filed in the United States Receiving Office will increase.

Effective June 1, 1986 the amount of the international search fee charged by the European Patent Office for PCT applications filed in the United States Receiving Office will be $930.00.

Effective also June 1, 1986 the amount of the International Fees for PCT applications filed in the United States Receiving Office will be:

Basic fee (first 30 pages)	$375.00
Basic supplemental Fee (each page over 30)	7.00
Designation Fee (per country or region up to ten)	90.00
Designation Fee (for 11th and subsequent countries or regions)	No Charge

DONALD J. QUIGG,
Mar. 31, 1986. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Board of Appeals Decisions Rendered in the Month of Mar. 1986

Affirmed	168
Affirmed in Part	37
Reversed	92
Total	297

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Apr. 26, 1983, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,380,833 through 4,381,566
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed

on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, th e patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 9, 1982, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,314,426	06/219,539	2/09/82
4,314,899	06/220,006	2/09/82
4,314,916	06/257,950	2/09/82
4,315,079	06/249,800	2/09/82

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,432,137, Re. S.N. 830,886, Filed Feb. 19, 1986, Cl. 030/292, ROTARY CUTTER, Yoshir Okada, Owner of Record: *Okada Kogyo Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: V. M. Creedon, et al., Ex. Gp.: 323

4,442,662, Re. S.N. 835,712, Filed Mar. 3, 1986, Cl. 056/228, METHOD AND APPARATUS FOR CONVERTING A HARVESTING MACHINE BETWEEN OPERATING AND TRANSPORT POSITIONS, Richard E. Jennings, Owner of Record: *Sperry Corp., New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

4,442,662, Re. S.N. 835,714, Filed Mar. 3, 1986, Cl. 056/228, METHOD AND APPARATUS FOR CONVERTING A HARVESTING MACHINE BETWEEN OPERATING AND TRANSPORT POSITIONS, Richard E. Jennings, Owner of Record: *Sperry Corp., New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

4,477,693, Re. S.N. 837,931, Filed Mar. 10, 1986, Cl. 174/036, MULTIPLY SHIELDED COAXIAL CABLE WITH VERY LOW TRANSFER IMPEDANCE, James A. Krabec, et al., Owner of Record: *Cooper Industries, Inc., Houston, Tex.,* Attorney or Agent: Eddie E. Scott, et al., Ex. Gp.: 215

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,646,651, Reexam. No. 90/000,965, Requested: Mar. 10, 1986, Cl. 29/130, ABRASION AND CORROSION RESISTANT COMPOSITE STRUCTURAL MATERIALS AND THE LIKE, Robert S. McGaughey, et al., Owner of Record: *McCreary Tire & Rubber Co., Indiana, Pa.,* Attorney or Agent: Walter J. Blenko, Jr., Ex. Gp.: 320, Requester: SW Industries, Inc., Providence, R.I.

3,697,559, Reexam. No. 90/000,976, Requested: Mar. 31, 1986, Cl. 260/397.2, 1,25-DIHYDROXYCHOLECALCIFEROL, Hector F. De Luca, et al., Owner of Record: *Wisconsin Alumni Research Foundation, Madison, Wis.,* Attorney or Agent: Howard W. Bremer, Ex. Gp.: 120, Requester: Owner

3,893,869, Reexam. No. 90/000,972, Requested: Mar. 19, 1986, Cl. 134/86, MEGASONIC CLEANING SYSTEM, Alfred Mayer, et al., Owner of Record: *RCA Corp., Princeton, N.J.,* Attorney or Agent: H. Christoffersen, Ex. Gp.: 240, Requester: Semiconductor Technologies, Inc., Rancho Cucamonga, Calif.

4,469,226, Reexam. No. 90/000,971, Requested: Mar. 17, 1986, Cl. 206/470, BLISTER PACK PANEL FOR FACE POWDER COMPACT DISPLAY, Arthur Matney, Owner of Record: *Inventor, Brooklyn, N.Y.,* Attorney or Agent: A. A. Saffitz, Ex. Gp.: 240, Requester: Stanley Lieberstein, New York, N.Y.

4,519,853, Reexam. No. 90/000,974, Requested: Mar. 26, 1986, Cl. 148/16.500, METHOD OF CARBURIZING WORKPIECE, Michel Kostelitz, et al., Owner of Record: *L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes, George Claude, Paris, France,* Attorney or Agent: Lee C. Robinson, Jr., Ex. Gp.: 110, Requester: Air Products & Chemicals, Inc., Allentown, Pa.

4,528,261, Reexam. No. 90/000,977, Requested: Mar. 31, 1986, Cl. 430/322, PRELAMINATION IMAGE-

WISE EXPOSURE OF PHOTOHARDENABLE LAYER IN PROCESS FOR SENSITIZING REGISTERING AND EXPOSING CIRCUIT BOARDS, William P. Hauser, Owner of Record: *E. I. DuPont de Nemours & Co., Wilmington, Del.,* Attorney or Agent: Andrew G. Golin, Ex. Gp.: 150, Requester: Sheldon H. Parker, Rahway, N.J.

4,546,612, Reexam. No. 90/000,973, Requested: Mar. 25, 1986, Cl. 62/55, METHOD OF PRODUCING FREE FLOWING SOLIDS, Chakra J. Santhanam, Owner of Record: *Arthur D. Little, Inc., Cambridge, Mass.,* Attorney or Agent: George W. Dishong, Ex. Gp.: 130, Requester: Owner

4,560,604, Reexam. No. 90/000,975, Requested: Mar. 26, 1986, Cl. 428/87, METHOD OF FLOCKING TREATMENT, Goro Shimizu, et al., Owner of Record: *Matsui Shikiso Chemical Co., Inc., Kyoto-Shi, Japan,* Attorney or Agent: John J. McGlew, Ex. Gp.: 150, Requester: John Kurucz, New York, N.Y.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Horizon Software, Inc., Waltham, Mass., Reg. No. 1,268,532, for the mark "SPEED", Canc. No. 15,226.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Patent Term Extension Under 35 U.S.C. 156(e)(2)

An order granting an interim extension of the term of U.S. Patent 3,433,791, issued Mar. 18, 1969, was issued on Mar. 17, 1986 under 35 USC 156(e)(2). The interim extension was granted until 14 calendar days after the date a notice of appeal to the U.S. Court of Appeals for the Sixth Circuit is due in *Norwich Eaton Pharmaceuticals, Inc.* v. *Bowen,* Civil Action No. C-1-85-1914 (S.D. Ohio Decided Mar. 3, 1986) *and,* in the event a notice of appeal is timely filed, until 14 calendar days after entry of a decision by the U.S. Court of Appeals for the Sixth Circuit on the appeal *and,* in the further event the U.S. Court of Appeals for the Sixth Circuit does not render a decision prior to Mar. 17, 1987, the interim extension shall expire on Mar. 17, 1987.

DONALD J. QUIGG,
Mar. 25, 1986. *Assistant Secretary and*
Commissioner of Patents
and Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for March 1986:

Service Item	FY 1985 Goal (Calendar Days)	FY 1986 Goal (Calendar Days)	Monthly Average (Calendar Days)
Filing Receipts:			
Patents	22	22	38
Trademarks	30	30	42*
Patent/Trademark Copies:			
Special Window Coupons	1	1	.3
Window Coupons	5	5	1.7
Mail Coupons	29	26	17
Letter Orders	34	26	17
Date of oldest unfilled order			Mar. 28, 1986
Current Mail Date being processed			Mar. 28, 1986
Certified Copies:			
Trademark Registrations	30	30	14
Applications-As-Filed	20	10	8
File-Wrapper/Contents	N/A	N/A	4
Walk-up Certification	1	1	1
Trademark Search Library:			
Filing Pending Marks	21	21	35
Filing Reg. Certificates	3	Issue Date	7 Days Late
Assignments:			
Patents	25	20	18
Trademarks	25	20	17
Avg. Days from Issue Fee Payment to Issue Date	90–100	90–100	98
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	4 weeks prior to Issue Date	On schedule
Patent Copies Available	Issue Date	Issue Date	93% on Issue Date
Trademark Copies Available	Issue Date	Issue Date	99% on Issue Date

*Tapes received late from contractor.

IMPROVEMENTS TO SERVICES

- *Electronic Ordering Service (EOS) for Patent and Trademark Copies* — We are pleased to announce that the 90-day EOS trial period has begun. The trial period will run from Apr. 7 to July 5, 1986. If you are interested in using EOS and have not already been in contact with either the PTO or Vanguard Technologies Corp., our copy fulfillment contractor, please call Mary Brown at 557-3236 or write to:

  Commissioner of Patents and Trademarks
  Box 11
  Washington, D.C. 20231

- *Photocopy Services* — TS Infosystems, Inc. (TSI), our facilities management contractor, has begun a new procedure. When customers increase the amount encoded on their CopiShare cards, TSI now includes the total dollar value on the cash receipt along with the amount of the increase. This provides a better record of encoding transactions. This practice was implemented at the suggestion of a member of the public.

- *Assignment Search Stations* — The Assignee/Assignor search capabilities in the Assignment Search Room have been expanded from four to ten search system stations to provide more accessibility. This was done as a result of numerous requests from public users.

- *Patent Search Tool: CASPIR* — The Computer-Aided Searching and Patent Information Retrieval System (CASPIR) has been available as searching tool for use with Class 364 — Electrical computers and Data Processing Systems in the Patent Public Search Room during the hours of 8:00 a.m. to 5:00 p.m. As a result of a request from a member of the public, we have extended the hours of availability to 8:00 p.m.

- *Microfilm Reader/Printers* — All reader/printers in the Patent Search Room have now been replaced with new Minolta 505 reader/printers. The Minolta reader/printer provides bond paper output. This upgrade, along with the consolidation of all U.S. film and equipment into the North Stacks, greatly improves the availability and quality of documents on U.S. films.

- *Public Service Center* — All requests for general information, as well as for resolution of service complaints, are now being handled by the Public Service Center. New phone numbers which can more easily be remembered

have been installed. Call 557-INFO (4636) for general information and 557-HELP (4357) for resolution of problems or complaints which could not be resolved through normal channels. The idea for these easier-to-remember numbers was prompted by a member of the public.

- *Help Us Help You* — We are striving to provide the best possible service. You and your ideas are important to us. We have been able to make many improvements in services as a result of suggestions made by the people who use our services. If you have a suggestion, please write:

  Theresa A. Brelsford
  Assistant Commissioner for Administration
  CP3 Room 11C34
  Washington, D.C. 20231

HELPFUL HINTS FROM THE PTO

- *Extension of Time Fees in Patent Cases* — Many requests for extension of time are being filed with insufficient fees. In the overwhelming majority of these cases the deficiency is due to the fact that an old fee schedule has been used.

  In those instances where there is no authorization to charge an account, additional fees are necessary to cover the additional time consumed in making up the original deficiency. If the maximum, six-month period has expired before the deficiency is noted and corrected, the application is held abandoned. In those instances where authorization to charge is included, processing delays are encountered in returning the papers to the PTO Finance Branch in order to apply these charges prior to action on the cases.

  Please note that effective Oct. 5, 1985, the *extension fees* in *patent* cases are as follows:

	Small Entity	*Non-small Entity*
One Month Extension	$ 28	$ 56
Two Month Extension	85	170
Three Month Extension	195	390
Four Month Extension	305	610

- *Appeal Fees in Patent Cases* — Similar fees deficiencies are frequent in the case of appeal fees, causing necessity for extension fees to cover the additional time consumed in making up the appeal fee deficiency.

  Please note that effective Oct. 5, 1985, the *appeal fees* in *patent* cases are as follows:

	Small Entity	*Non-Small Entity*
Notice of Appeal	$65	$130
Appeal Brief	65	130
Oral Hearing	55	110

- *Information to be Included on Papers Filed in Pending Applications* — The Patent Examining Corps is currently in the midst of a workload balancing program among the Examining Groups. To facilitate prompt matching of incoming papers with applications it would be most helpful if the following information appears at the top of all papers filed in pending applications:

  1. Serial Number (checked for accuracy)
  2. Group Art Unit Number (from the most recent paper received from a Group Art Unit, or from the filing receipt if no paper has been received from a Group Art Unit).
  3. Name of the Examiner (who prepared the most recent Office Action)
  4. Title of the Invention
  5. Filing Date (of the application)
  6. Inventor's Name

- *Addressing Papers Involving Secrecy of Certain Inventions and Licenses to Export and File Applications in Foreign Countries (37 CFR 5)* — All correspondence in connection with 37 CFR 5 should be addressed to:

  Commissioner of Patents and Trademarks
  (Attention Licensing and Review)
  Washington, D.C. 20231

  Improperly addressing such correspondence may delay delivery and could result in violations of 37 CFR 5. See 37 CFR 5.33 regarding correspondence.

- *Reissue Oaths and/or Declarations* — Since standard oath and declaration forms are not used in reissue applications, applicants are commonly neglecting to include averments required by 37 CFR 1.63 per 37 CFR 1.175(a). The most frequent omissions involve the "duty of disclosure" acknowledgment, and the "reviewed and understands" statement. Such omissions usually necessitate additional handling and correspondence, and cause undue time delays, which result in postponement of publication of the reissue patent.

Direct any questions regarding the above Helpful Hints to:

Al Lawrence Smith
Director, Group 350
(703) 557-3414

• *Express Mail* — The Patent and Trademark Office (PTO) continues to receive correspondence filed under the provisions of 37 CFR 1.10 in which the certificate of mailing by "Express Mail" certifies that the correspondence is being mailed on one date while the "Express Mail" label shows a "Date-In" on a different date. This usually occurs when the "Express Mail" package is deposited in a remote "Express Mail" receptacle or mailbox after the last pick-up and accordingly are not being picked-up and processed by the Postal Service until the next business day. The question as to the treatment of such a situation was covered in the final rulemaking published on Jan. 20, 1983, at 48 FR 2696–2714 and on Feb. 1, 1983, at 1027 O.G. 9. The following comments appear therein:

"Comment: One person questioned what treatment will be accorded a paper placed in an 'Express Mail' box receptacle after the box has been cleared for the last time on a given day."

"Reply: The paper will be considered to be deposited as of the date of receipt indicated on the 'Express Mail' mailing label by the Postal Service clerk."

While the number of such instances in which the certificate states one date and the receipt states a different date is not large when compared to the total number of filings under the provisions of 37 CFR 1.10, it does cause problems for the PTO and the applicants involved when it does occur.

In view of the above, it is recommended that where the filing date of a paper or fee is critical, e.g., the filing of a patent application, and particularly when the deposit by "Express Mail" is being made late in the business day, the correspondence should be personally delivered to a Post Office where receipt of the "Express Mail" package by the Postal Service on the date indicated in the certificate of mailing by "Express Mail" can be immediately obtained from a Postal Service clerk.

Applicants are also reminded that 37 CFR 1.10 requires that the certificate of mailing by "Express Mail" be signed by the person *actually mailing* the paper or fee; i.e., the person who actually deposits the paper or fee with the U.S. Postal Service. The PTO has encountered some instances in which the certificate of mailing by "Express Mail" was signed by an attorney and the deposit was made by the attorney's secretary or another member of the attorney's staff. This is improper under the provisions of 37 CFR 1.10. This section differs in that regard from 37 CFR 1.8.

Any questions regarding this item should be directed to Frank Burnett, 557–3054.

• *Return Post Card* — If a receipt for any paper filed in the Patent and Trademark Office is desired, it may be obtained by enclosing with the paper a self-addressed post card identifying the paper. The Patent and Trademark Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to clearly identify the paper for which receipt is requested. For example, the card should identify the applicant's name(s), serial number, filing date, interference number, etc. Also, the paper(s) should be identified by specifying the type thereof, namely affidavit, amendment, appeal, itemized components of applications, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

A post card receipt which itemizes and properly identifies the papers which are being filed serves as prima facie evidence of receipt in the PTO of all the items listed thereon on the date stamped thereon by the PTO unless the post card receipt has been annotated by the PTO to indicate that one or more items were not received. A post card receipt will *not* serve as prima facie evidence of receipt in the PTO if the papers are not itemized in a detailed manner, e.g., number of pages of specification and number of sheets of drawings, or if the post card receipt has been annotated to indicate that one or more items was not received.

When papers for more than one document are filed under a single cover, a return addressed post card should be attached to the paper for each document for which a receipt is desired.

Any questions relating to this item should be directed to Frank Burnett, 557–3054.

Apr. 7, 1986.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 29, 1986

D. 281,862	4,525,566	4,551,588	4,560,491
4,370,348	4,527,594	4,552,095	4,560,756
4,371,646	4,529,554	4,552,312	4,560,767
4,410,759	4,530,368	4,553,101	4,560,783
4,412,901	4,532,664	4,553,645	4,560,964
4,422,868	4,536,250	4,553,722	4,561,610
4,463,254	4,536,448	4,553,932	4,561,904
4,480,092	4,538,190	4,554,129	4,562,606
4,492,859	4,538,884	4,554,574	4,562,758
4,494,777	4,539,367	4,554,834	4,563,085
4,498,348	4,540,107	4,555,539	4,563,954
4,500,200	4,541,441	4,555,607	4,564,060
4,507,252	4,541,848	4,555,865	4,565,166
4,508,964	4,542,045	4,556,711	4,566,690
4,509,144	4,542,658	4,557,290	4,567,133
4,511,823	4,544,983	4,557,380	4,567,140
4,512,886	4,545,097	4,557,539	4,567,263
4,517,461	4,545,868	4,559,342	4,567,830
4,518,044	4,545,975	4,559,434	4,567,884
4,518,072	4,546,949	4,559,453	4,568,835
4,519,010	4,547,273	4,559,933	4,568,857
4,520,894	4,547,914	4,560,042	4,569,338
4,522,651	4,548,486	4,560,225	4,569,906
4,523,121	4,548,541	4,560,340	4,571,332

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF March 29, 1986

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	4-01-85
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	2-15-84
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	12-18-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-01-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	3-02-84
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	11-14-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	11-21-83
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—E. E. KUBASIEWICZ, Director	1-22-85
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	3-28-83
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	8-30-83
DESIGN, GROUP 290—K. L. CAGE, Director	1-03-84
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	10-11-84
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	8-18-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-25-84
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-01-85

Expiration of patents: The patents within the range of numbers indicated below expire during March 1986, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,430,260 to 3,435,459, inclusive

Plant Patents . . . . . Numbers 2,870 to 2,875 inclusive

REEXAMINATIONS

APRIL 29, 1986

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,485,120 (494th)

METHOD AND APPARATUS FOR CUTTING ELONGATED MATERIAL

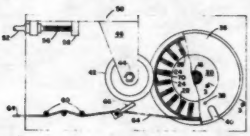
Garland B. Keith, Kingsport, Tenn., assignor to Lummus Industries, Inc., Columbus, Ga.

Reexamination Request No. 90/000,739, Mar. 14, 1985.

Reexamination Certificate for Patent No. 3,485,120, issued Dec. 23, 1969, Ser. No. 577,930, Sep. 8, 1966.

Int. Cl.[4] B26D *1/40*

U.S. Cl. 83—37



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–7, 9–19,** and **21–25** is confirmed.

Claims **8, 26** and **29** are determined to be patentable as amended.

Claims **20, 27** and **28,** dependent on an amended claim, are determined to be patentable.

8. A method of cutting filamentary material into a number of lengths of controlled dimensions comprising the steps of:

(a) spirally winding said filamentary material into a coil having a plurality of *radially extending* layers the innermost of which is placed in touch contact with a plurality of spaced knife edges;

(b) maintaining contact between said innermost layer and said knife edges with no relative movement therebetween longitudinally of said filamentary material;

(c) applying a force on the outermost layer of said material, said force being directed toward the innermost layer causing said innermost layer to move at an angle substantially perpendicular to its longitudinal axis thereby forcing said innermost layer past said knife edges and severing said filamentary material into lengths of controlled dimensions.

B1 4,301,302 (495th)

TETRAALKYL SUBSTITUTED TRICYCLIC KETONE

Mark A. Sprecker, Sea Bright; James M. Sanders, Eatontown; William L. Schreiber, Jackson; Hugh Watkins, Lincroft; Joaquin F. Vinals, Red Bank, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Thomas J. O'Rourke, Red Bank, N.J.; Myrna L. Hagedorn, Highland Park, N.J., and Philip Klemarczyk, Old Bridge, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Reexamination Request No. 90/000,742, Mar. 15, 1985.

Reexamination Certificate for Patent No. 4,301,302, issued Nov. 17, 1981, Ser. No. 206,617, Nov. 13, 1980.

Continuation-in-part of Ser. No. 95,149, Nov. 16, 1979, Pat. No. 4,250,338.

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.[4] C07C *49/453*

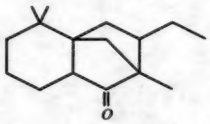
U.S. Cl. 568—373

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

New claims **2–4** are added and determined to be patentable.

1. The tricyclic ketone having the structure:



in recovered form.

REISSUES

APRIL 29, 1986

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

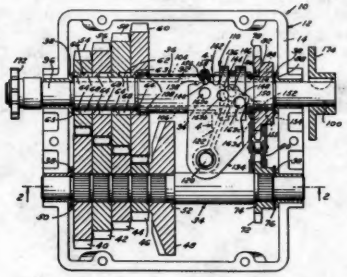
Re. 32,125
TRANSMISSION

Roland L. Von Kaler, Tecumseh, and Norman E. Jolliff, Tipton, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Original No. 3,812,735, dated May 28, 1974, Ser. No. 328,481, Jan. 31, 1973. Continuation-in-part of Ser. No. 171,920, Aug. 16, 1971, abandoned. Application for reissue Mar. 26, 1981, Ser. No. 247,921

Int. Cl.[4] F16H *3/08;* **B60K** *20/00*

U.S. Cl. 74—371 **29 Claims**



8. [The combination of claim 7 wherein said shift means comprises a rotary shift shaft journaled in said housing and said] *In a transmission including a housing having opposite end walls and side walls, a shaft having first and second portions extending axially of said shaft, said first portion being intermediate said second portions and being cylindrical and diametrically enlarged transversely of the axis of said shaft relative to said second portions, said second portions of said shaft being respectively journaled in said housing end walls, said shaft having a groove in the outer surface thereof extending axially in said diametrically enlarged first portion and terminating interiorly of said housing, a plurality of speed-changing gears freely journaled on said first portion of said shaft within said housing and having key-receiving means, a key within said groove axially slidable between successive gear-engaging positions and having successive interengagements with said key-receiving means of successive gears when axially shifted to successive gear-engaging positions whereby the selected gear with which said key is interengaged is drivingly coupled via said key to said shaft, at least one end of said groove terminating in an axially open end adjacent one said second portion to permit said key to be inserted lengthwise into said groove through said axially open end thereof, a rotary shift shaft journaled in said housing side walls and extending thereacross, means including a shift fork on said shift shaft and rotatable therewith, and a collar slideably mounted on said first shaft portion operatively connected to said key for axially shifting said key between said gear-engaging positions said shift fork engaging said collar for axially shifting the same:* detent means [comprises] *in said housing comprising* a rotary *plate* member on said shift shaft *in said housing* having [a] *an arcuate edge* portion radially spaced from said shift shaft for movement opposite a portion of said housing, a detent-seat-engaging member *in said housing* between said [two] *arcuate edge and housing* portions [biased], *and spring means in said housing biasing said detent-seat-engaging member* radially [of] *toward* said shift shaft and a plurality of angularly spaced-apart first detent seats in [one of said portions] *said edge portion of said plate member,* said detent-seat-engaging member having selective engagements with said first detent seats in accordance with the rotary position of said shift shaft to thereby correlate the rotary positions of said shift shaft with the gear-engaging positions of said key.

Re. 32,126
TONER IMAGE PRESSURE-FIXING DEVICE

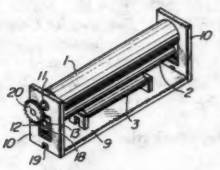
Yoshitaka Sasaki, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Japan

Original No. 4,259,920, dated Apr. 7, 1981, Ser. No. 103,104, Dec. 13, 1979. Continuation of Ser. No. 882,148, Feb. 28, 1978, abandoned. Application for reissue Nov. 23, 1981, Ser. No. 324,028

Claims priority, application Japan, Aug. 5, 1977, 52-93426; Aug. 17, 1977, 52-97881; Aug. 17, 1977, 52-97882

Int. Cl.[4] G03G *15/20*

U.S. Cl. 100—158 R **19 Claims**



9. A pressure fixing device wherein a toner image on a surface of a toner image bearing member is fixed thereon by pressure, comprising:

first and second rollers for pressing and conveying an image bearing member therebetween; and

a third roller press-contacted to said first roller;

wherein each of said first, second and third rollers is made of a material suitable for applying sufficient pressure to the image bearing member to fix the image thereon;

wherein said first roller is located between said second and third rollers and has a diameter smaller than that of said second roller; and

wherein said three rollers are so arranged that, when no pressure for fixing the image is applied, at least two of said rollers have their axes at angles with the conveyance direction of the image bearing member which angles are different from each other, as viewed when facing the surface of the image bearing member.

Re. 32,127
COMPOSITE CAN WITH COMPRESSED END TO PROVIDE EASY OPENING

Harold D. Abner, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

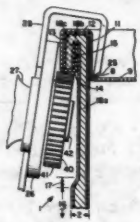
Original No. 4,369,912, dated Jan. 25, 1983, Ser. No. 274,346, Jun. 17, 1981. Application for reissue Feb. 14, 1984, Ser. No. 580,059

Int. Cl.[4] B65D *3/10, 5/00, 13/00*

U.S. Cl. 229—5.6 **21 Claims**

13. In a composite container constructed particulary for the accommodation of the cutting blade and drive wheel of a conventional can opener, a composite wall defining a tubular body with opposed ends, said wall, along a circumferential section of the tubular body adjacent at least one of said ends, being inwardly compressed and densified, defining a wall portion both thinner than and of a greater density than the remainder of said wall, said circumferential section having an internal diameter equal to the internal diameter of the remainder of said tubular body, a metal end cap overlying said one of said ends, said end cap including a

peripheral flange seamed to said wall portion to define a peripheral sealing bead, said circumferential section and said wall portion



defined thereby extending a substantial distance along said tubular body beyond said bead to define an external recess perpherally about said body.

Re. 32,128

TRANSPORT APPARATUS FOR TRANSPORTING FLEXIBLE SHEET-LIKE ARTICLES

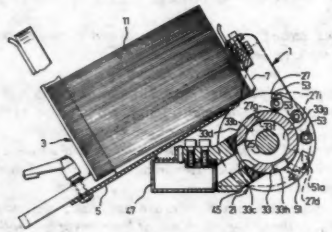
Martin Blümle, Horhausen, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG, Fed. Rep. of Germany

Original No. 4,320,893, dated Mar. 23, 1982, Ser. No. 159,844, Jun. 16, 1980. Application for reissue Mar. 9, 1984, Ser. No. 588,152

Claims priority, application Switzerland, Jun. 23, 1979, 5847/79

Int. Cl.[4] B65H *3/12*

U.S. Cl. 271—94 **9 Claims**



1. Transport apparatus for transporting flexible sheet-like articles, comprising:

a frame;

a transport cylinder which is mounted on said frame to be rotatable about an axis and which includes means for defining at least two suction transfer ducts,

passage means, connected to said ducts and opening at the circumference of said cylinder, for supplying suction to attract individual such articles to said circumference for transport by said cylinder, and

a groove means for extending circumferentially of said cylinder and between said ducts,

the base of said groove means being in the form of an annular surface which is co-axial with said axis and which includes a recess;

a suction means for providing suction; and

transfer means for drawing individual such articles partly into said groove means in a predetermined rotational orientation of said cylinder to facilitate transfer of the articles thereto,

said transfer means including a member which is

mounted on said frame to be secure against rotation and which projects into said groove means,

said member including an inner surface facing said annular surface and extending concentrically therewith and further including means for defining a first passage connected to said suction means and opening at said inner surface of said member and a second passage which extends between and opens at said inner surface of said member and an outer surface of said member in said groove means and which second passage is connected to said first passage by said recess when the cylinder is in said predetermined rotational orientation for supplying suction to attract said individual articles to said outer surface.

11. Transport apparatus according to claim 1, wherein the end of said second passage which opens at said inner surface of said member is formed by a single opening and the other end of said second passage which opens at said outer surface of said member is formed by a plurality of narrow openings.

Re. 32,129

INJECTION BLOW MOLDING MACHINE

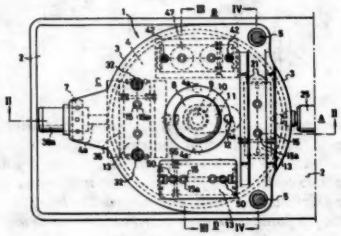
Katashi Aoki, Sakaki, Japan, assignor to Nissie ASB Machine Co., Ltd., Sakaki, Japan

Original No. 4,105,391, dated Aug. 8, 1978, Ser. No. 775,836, Mar. 9, 1977. Application for reissue Aug. 7, 1980, Ser. No. 176,260

Claims priority, application Japan, Mar. 12, 1976, 51-026908

Int. Cl.[4] B29C *49/06, 49/36*

U.S. Cl. 425—525 **4 Claims**



1. An injection blow molding machine comprising:

a machine bed having a substantially horizontal surface for mounting the operating stages of the molding machine thereon;

four operation stages being disposed on the horizontal surface of the machine bed, such stages being an injection molding stage, a heating stage, a stretching and blowing stage and a releasing stage;

a base plate disposed parallel to and above the horizontal surface of the machine bed;

a rotary disk rotatably attached to the under-surface of the base plate;

the rotary disk being provided with four neck molds, each of said neck molds being disposed correspondingly to one of said operation stages;

a motor secured to a middle portion of said base plate, said motor having a drive shaft which passes through the rotary disk;

an arm attached at one end thereof to the lower end of the drive shaft of the motor and at the other end thereof to a connecting pin means, the connecting pin means being engagable with the rotary disk to intermittently rotate the rotary disk to respective ones of said operation stages;

a mold closing mechanism associated with the injection molding stage;

a heating core inserting mechanism associated with the heating stage to heat a parison from the injection molding stage;

a stretching and blowing mechanism associated with the stretching and blowing stage to stretch and blow the heated parison from the heating stage;

a molded product releasing mechanism associated with the releasing stage to release the stretched and blown molded product from the stretching and blowing stage;

the mold closing mechanism, heating core, stretching and blowing mechanism, and product releasing mechanism being secured on the periphery of the base plate and positioned respectively in the injection molding, heating, stretching and blowing, and releasing stages;

injection mold, blow molds and heating cylinders being disposed in the space between the machine bed and the base plate; and

hydraulic means associated with each of said mechanisms for the selective actuation thereof.

* * * * *

The questions raised in reexamination request No. 90/000,455, filed Oct. 7, 1983, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(e).

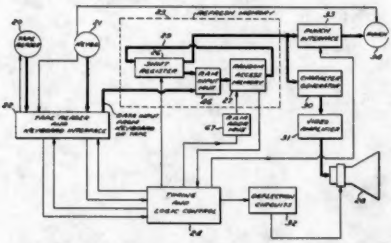
Re. 32,130
APPARATUS FOR EDITING AND CORRECTING DISPLAYED TEXT

Walter G. Frederickson, Indialantic; Albert W. Heitmann, Melbourne; George M. Jones, Indian Harbour Beach, and Howard A. Thrailkill, Indialantic, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Original No. 3,706,075, dated Dec. 12, 1972, Ser. No. 37,177, May 14, 1970. Application for reissue Aug. 6, 1973, Ser. No. 385,651

Int. Cl.[4] G09G *1/06*

U.S. Cl. 340—726 **39 Claims**



1. An editing apparatus for editing a train of data items and including memory means for storing said train of items, said memory means comprising a progressive memory having an input and an output and through which said train of data items travels and a non-progressive memory having a plurality of storage locations: said memory means outputting data at a frequency determining a timing period for said memory means, write means for writing successive data items from the output of the progressive memory into successively addressed storage locations of the non-progressive memory, read means for sequentially accessing said successively addressed storage locations and tracking said write means to read successive data items out of said storage locations of the non-progressive memory into the input of the progressive memory, timing means for actuating said read means and said write means in timed relationship to the movement of said data train through said progressive memory to sequentially address said storage locations, and editing means cooperating with said non-progressive memory for modifying the number of items in said data train comprising means cooperating with said timing means to vary said timed relationship in at least one of said read and write means to change the number of data items stored in said successively addressed locations between the write means and the read means on a change in the number of data items in said train.

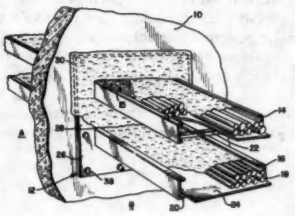
Re. 32,131
FIRE PROTECTIVE TAPE

James P. Stahl, Clifton Heights, Pa., assignor to Thomas & Betts Corporation, Raritan, N.J.

Original No. 4,273,821, dated Jun. 16, 1981, Ser. No. 92,063, Nov. 6, 1979. Continuation-in-part of Ser. No. 872,820, Jan. 27, 1978, Pat. No. 4,189,619. Application for reissue Jul. 12, 1982, Ser. No. 397,630

Int. Cl.[4] B32B *7/00, 9/04, 5/16*

U.S. Cl. 428—215 **14 Claims**



1. An electrical arc and fire protective tape for disposition about electrical equipment, cables, cable splices, appurtenant equipment or the like, comprising a resinous mixture coated as a wet mastic mixture and dried upon a fabric base or plastic sheet or film substrate, said mastic comprising an essentially halogen-free mixture of solids and thermoplastic binder resins dispersed as an emulsion in water, said solids including heat intumescing and expanding substances in approximate quantity of 4 to 25% to expand the mastic to porous heat insulating foam, ceramic frits in approximate quantity of 5 to 40% to provide a ceramic glaze upon the surface of the dry expanded mastic when exposed to high temperatures developed by fire, hydrated substances in approximate quantity of 10 to 40% and having bonded water evolvable only by application of sufficient heat to decompose and evolve water vapors, and a resinous thermoplastic binder in approximate quantity of 5 to 40% to bind said solids to the form of a flexible film in coated form of the mastic, said binder being dispersed as an emulsion in water, there being sufficient water in the emulsion to convert said solids into a fluidized form for application as a coating upon said base or substrate, said percentages being by weight, the said solids quantity being based on the total solids of the composition.

13. A fire retardant mastic comprising an essentially halogen-free mixture of solids and thermoplastic binder resins dispersed as an emulsion in water, said solids including heat intumescing and expanding substances in approximate quantity of 4 to 25% to expand the mastic to porous heat insulating foam, ceramic frits in approximate quantity of 5 to 40% to provide a ceramic glaze upon the surface of the dry expanded mastic when exposed to high temperatures developed by fire, hydrated substances in approximate quantity of 10 to 40% and having bonded water evolvable only by application of sufficient heat to decompose and evolve water vapors, and a resinous thermoplastic binder in approximate quantity of 5 to 40% to bind said solids together, said binder being dispersed as an emulsion in water, there being sufficient water in the emulsion to convert said solids into a fluidized mastic form, said percentages being by weight, the said solids quantity being based on the total solids of the composition.

Re. 32,132

VIDEO SIGNAL PLAY-BACK CIRCUIT

Hisashi Nakamura, Tokyo; Toshiyuki Akiyama, Kokubunji; Akira Shibata, Yokosuka, and Yoichi Tokunaga, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Original No. 4,210,942, dated Jul. 1, 1980, Ser. No. 883,155, Mar. 3, 1978. Application for reissue Jul. 1, 1982, Ser. No. 394,640

Claims priority, application Japan, Mar. 11, 1977, 52-25943

Int. Cl.[4] G11B *5/45, 5/02;* H03F *1/34*

U.S. Cl. 360—65 14 Claims

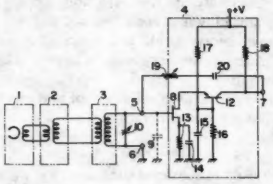
1. A video signal play-back circuit comprising:

a magnetic head which detects a video signal recorded on a magnetic recording medium;

a resonance circuit which is electrically connected to said magnetic head so that the signal picked up by said magnetic head may be applied to said resonance circuit, and which includes an inductance element and a capacitance element including a variable capacitor for adjusting the resonance frequency of the resonance circuit for equalization of the frequency characteristic of the signal play-back circuit;

an amplifier circuit having a field-effect transistor of which the gate terminal is connected with said resonance circuit to provide a high input impedance to said amplifier circuit; and

means for adjusting a quality factor Q of said resonance circuit without any substantial increase in thermal noise of said resonance circuit, said means comprising



a variable resistor which is connected between one output terminal of said amplifier circuit and one terminal of said resonance circuit and which [serves to adjust a quality factor Q of said resonance circuit] *has a value of resistance which sets the quality factor Q of said resonance circuit at a value between 2 and 4.*

PLANT PATENTS

GRANTED APRIL 29, 1986

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,728
ROSE PLANT

Nelson F. Jolly, Galena, Md., assignor to Jolly's Rosehill Farm of Kent, Inc., Galena, Md.

Filed Oct. 18, 1984, Ser. No. 663,465
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by well formed, heavily petalled flowers of light Neyron rose coloring having deeper-toned flower centers where petals remain bunched until opening and with petals reflexing and rolling under upon opening while retaining good form.

5,729
ROSE PLANT KRIBALOR

Michel Kriloff, Antibes, France, assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 21, 1984, Ser. No. 652,837
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant habit, resistance to rose powdery mildew, downward hooked thorns, bi-color orange and white blooms.

5,730
FLOWERING CHERRY TREE

William Flemer, III, Princeton, N.J., assignor to Treesearch, Kingston, N.J.

Filed Oct. 24, 1984, Ser. No. 664,203
Int. Cl.[4] A01H *5/03*
U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of flowering cherry tree substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the strong pink color of its abundant flowers, vigorous, spreading, broader than tall habit, rapid growth, resistance to cold damage to buds, withstanding temperatures to minus nineteen degrees F., in contrast to other usual *Prunus yedoensis* trees which suffer bud damage such as to lose ninety percent of their buds and bark injury from freezing.

5,731
MINIATURE CARNATION—BALLERINA

Angelo J. Siri, San Francisco, Calif., assignor to Sir Brothers Nursery, Inc., East Palo Alto, Calif.

Filed Aug. 17, 1984, Ser. No. 641,918
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—70 **1 Claim**

1. A new and distinct variety of miniature carnation plant, substantially as herein shown and described.

5,732
CHRYSANTHEMUM PLANT NAMED ILLINI PRAIRIE

John R. Culbert, Clinton, Ill., assignor to University of Illinois, Chicago, Ill.

Continuation of Ser. No. 488,012, Apr. 25, 1983, abandoned.
This application Oct. 12, 1984, Ser. No. 660,057
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum plant named Illini Prairie, as described and illustrated, and particularly characterized by its flat capitulum form and single capitulum type, bright yellow spoon ray florets; 65–80 mm. diameter across face of capitulum; medium height and semi-upright branching pattern, superior floriferousness, and by its good form and color retention.

5,733
CHRYSANTHEMUM PLANT NAMED QUEST

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 27, 1984, Ser. No. 644,261
Int. Cl.[4] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant named Quest, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; yellow ray floret color; diameter across face of capitulum ranging from 9 to 10 cm. at maturity; uniform eight week flowering response; medium plant height; spreading branching pattern; tolerance of both low winter 13° C. minimum and high summer 24° C. night to 38° C. day temperatures for bud initiation and flower development, and its tolerance of very low winter light environment with 15° C. minimum temperature.

PATENTS

GRANTED APR. 29, 1986

ERRATA

For CLASS	See PATENT NO.
623–013	4,584,722
211–041	4,584,950
271–010	4,585,218
029–021	4,585,257
294–145	4,585,260
522–031	4,585,534
558–255	4,585,595
558–268	4,585,596
558–196	4,585,598
426–106	4,585,655
315–039	4,585,965
568–433	4,585,989
375–003	4,586,186

PATENTS

GRANTED APRIL 29, 1986

GENERAL AND MECHANICAL

4,584,721

DEVICE FOR USE IN HELMET FOR PREVENTING FOGGING BY ELECTRIC HEATING

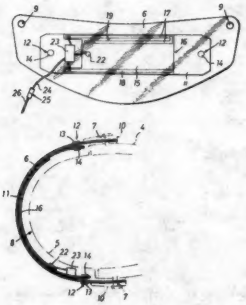
Tamenobu Yamamoto, Higashi-Osaka, Japan, assignor to Yamamoto Kogaku Co., Ltd., Japan

Filed Mar. 17, 1983, Ser. No. 476,156

Claims priority, application Japan, May 12, 1982, 57-70187[U]

Int. Cl.[4] A42B *3/02*

U.S. Cl. 2—424 **4 Claims**



1. In a helmet provided with a removable shield panel for closing a front opening in a main body of the helmet, an electrical heating device for preventing the shield panel from fogging, characterized in that a support plate curved along the shield panel is removably attached at its opposite ends to an inner side of the shield panel by fastening means, a heat generating plate being attached to the support plate and formed with a transparent heat generating electrically conductive film by vacuum evaporation substantially over the entire surface of the support plate, a pair of upper and lower electrodes being formed on a surface of the conductive film adjacent to and along upper and lower edges of the film respectively and composed of an electrically conductive coating composition having a conductive metal powder incorporated therein, the pair of upper and lower electrodes extending substantially over the entire length of the film in parallel with each other, one of the pair of electrodes having a first strip portion close to the corresponding edge of the film and a second strip portion close inwardly remote from the corresponding edge, the first and second strip portions being continuous with each other at one end of said one electrode, a cut line being formed in the conductive film and extending lengthwise thereof between the first and second portions to electrically separate the first portion from the second portion except at the continuous portion at said one end, a pair of power supply lead wires being respectively connected to the first portion of said one electrode at another end thereof and to the other electrode an an end thereof which is at the same end of the film as said other end of said one electrode.

4,584,722

PROSTHETIC TENDON

Moshe Levy; Shaul A. Gassner, both of Rehovot, and Reuben Farber, Givataim, all of Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed May 10, 1983, Ser. No. 493,327

Claims priority, application Israel, May 24, 1982, 65855

Int. Cl.[4] A61F *1/00*

U.S. Cl. 623—13 **13 Claims**

1. A tendon prosthesis consisting essentially of a tubular core of biocompatible fabric, embedded in a polymer which provides elasticity and prevents tissue ingrowth therethrough, said core being encased in a sleeve of biodegradable material, said biodegradable material being selected so as to prevent growth of surrounding tissue towards said core, and said core having

fabric extending beyond said sleeve at both ends for attachment to the bone and muscle, whereby upon implantation the sleeve undergoes enzymatic degradation thus serving as a temporary spacer between the newly developed tendon sheath and the surface of the core structure.

4,584,723

FITTING FOR CONNECTING A PLUMBING FAUCET TO PLUMBING PIPES

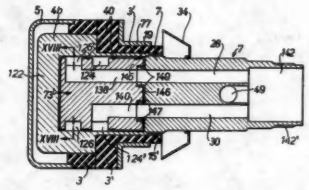
Walter Hussauf, Fistelstrasse, CH-8497 Fischenthal, Switzerland

Filed Jun. 11, 1984, Ser. No. 619,618

Claims priority, application Switzerland, Jun. 29, 1983, 3557/83

Int. Cl.[4] F16K *25/00*

U.S. Cl. 4—192 **12 Claims**



1. A fitting for connecting a plumbing faucet to hot and cold water plumbing pipes (8, 9; 8*a*, 9*a*) for supplying hot and cold water to said faucet, comprising: a housing (5) having a central housing axis and a cavity (25) in said housing, a fixture (7) for mounting said faucet, a fitting member (4) operatively mounted in said housing for connecting said fixture (7) to said housing (5), said fixture (7) having separate cold and hot water ducts (28, 30), said fitting member (4) comprising respective hot and cold water chambers (12, 14) for communicating with said ducts (28, 30) and respective connecting pipe sections (11, 11') connecting said hot and cold water chambers (12, 14) to said hot and cold water plumbing pipes, said fitting member (4) further comprising a bore (19) extending substantially coaxially with said central housing axis, said fixture (7) being operatively received in said bore (19) for rotational adjustment into a position for fluid passing cooperation between said respective chambers in said fitting member (4) and the corresponding one of said ducts in said fixture (7), each of said hot and cold water ducts of said fixture having a respective duct inlet (36, 38) in said fixture (7), said duct inlets (36, 38) being axially displaced relative to each other with respect to said central axis for facilitating said cooperation, and sealing means (40) on said fixture (7) for separating said duct inlets (36, 38) from each other, said fitting member (4) comprising two axially spaced

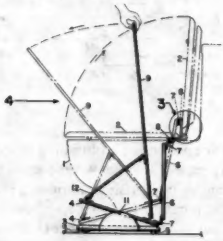
ports (45, 47) each port communicating through said hot and cold water chambers (12, 14) with said connecting pipe sections (11) and through said duct inlets (36, 38) with said ducts (28, 30) for providing fluid passages from said hot and cold water plumbing pipes to said faucet, a mixing valve unit (32) connected to ends of said ducts (28, 30) outside said fixture for selecting the desired temperature of the mixed water and for volume control, ring groove means betweeen said fitting member (4) and said fixture (7) cooperating with said duct inlets (36, 38), said fixture 7 comprising a discharge port (49) for the mixed water outside said fitting member (4), said fitting member (4) and said fixture (7) with said discharge port (49) forming separate parts for permitting any desired rotational angular adjustment betweeen these parts, said fitting further comprising means for securing said fixture (7) in an angularly and axially adjusted position relative to said housing (5), and wherein said fixture (7) comprises a cylindrical insert section (7*a*) fitting into said bore (19) of said fitting member (4), said means for securing said fixture (7) fixing said cylindrical insert section (7*a*) radially and axially in said bore of said fitting member, said duct inlets (36, 38) of said fixture (7) being so constructed and located in said cylindrical insert section (7*a*) that the respective inlet duct (28, 30) remains in fluid communication with the corresponding port (45, 47) in said fitting member (4) in any angularly adjusted position of said cylindrical insert section (7*a*) of said fixture, said sealing means (40) comprising a number of sealing rings located around said cylindrical insert section (7*a*) so as to separate said duct inlets (36, 38) from each other in said cylindrical insert section (7*a*) of said fixture (7).

4,584,724

TOILET SEAT LIFTING AND LOWERING DEVICE

Patricia Z. Wilson, 1291 Ashland Dr., Baton Rouge, La. 70806

Filed May 24, 1985, Ser. No. 737,530
Int. Cl.[4] A47K *13/10*
U.S. Cl. 4—251 **1 Claim**



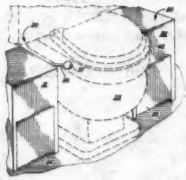
1. A toilet seat lifting and lowering device for use with a conventional toilet bowl and seat arrangement, comprising; a base positionable on a floor to one side of said toilet bowl, said base including upstanding structure providing a fulcrum, a pedal pivotally mounted between a first and a second portion thereof to said base via said fulcrum, a rigid rod pivotally attached at one end to said second portion of said pedal, and at a second end to the under side of said toilet seat, a hand operated rod attached to said pedal on said second end portion of said fulcrum and extending upwardly a substantial distance above the level of said toilet seat, a bracing rod attached at one end to said hand operated rod and at the other end to said first portion of said pedal, wherein movement of said hand operated rod in a plane containing said hand operated rod and said rigid rod will cause said pedal to pivot about said fulcrum which will in turn cause said rigid rod to move said toilet seat from a raised to a lowered position or vice versa.

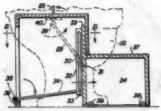
4,584,725

RETRACTABLE SQUAT-FACILITATION TOILET FOOTREST

Debra Oliver, P.O. Box 1791, Sedona, Ariz. 86336

Filed Jul. 15, 1985, Ser. No. 754,658
Int. Cl.[4] E03D *11/00*
U.S. Cl. 4—254 **17 Claims**





1. A retractable squat-facilitation footrest for use by a person seated upon a toilet, said toilet having a seat, said seat defining a seat plane, said retractable squat-facilitation footrest comprising:

housing means adjacent said toilet;

first means retractingly coupled to said housing means for upwardly inclining when said first means is in an extended state the femur of a person seated upon said toilet, and

second means coupled to said housing means for retracting said first means into said housing means and for extending said first means from said housing.

4,584,726

FLUID OPERATED WASTE TANK SERVICING ASSEMBLY

Laurence M. Grills, Mission Viejo, and Eugene F. Colditz, Huntington Beach, both of Calif., assignors to Kaiser Aerospace & Electronics Corp., Oakland, Calif.

Filed Jul. 9, 1984, Ser. No. 629,058
Int. Cl.[4] E03D *1/34*
U.S. Cl. 4—378 **14 Claims**

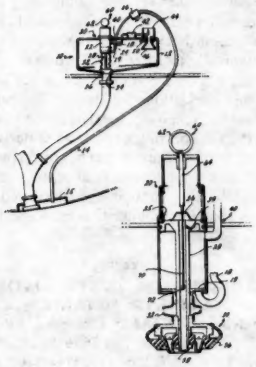
1. The combination with a lavatory waste tank having a drain valve and means for rinsing the tank of:

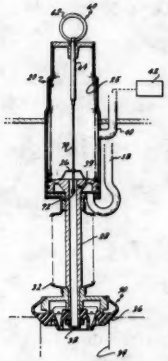
(a) hydraulic valve operating means operatively connected to the tank rinse intake line for opening the drain valve when applied rinsing fluid pressure exceeds a predetermined value; and

(b) precharge storage means, interposed in the rinse liquid flow path between said valve operating means and the tank rinsing means;

whereby connection of a source of rinsing liquid under pressure to the rinse intake line first operates said hydraulic valve operating means to open the drain valve and then fills said precharge storage means before rinsing the tank, and whereby terminating the flow of rinsing liquid to said

hydraulic valve operating means permits the drain valve to close, said precharge storage means then emptying its





contents into the tank after the drain valve closes as a measured precharge of fluid to the waste system.

4,584,727

SOFA BED SPRING IMPROVEMENTS

Bernard Reiss, Baltimore, and Irl E. Ward, Salisbury, both of Md., assignors to Sealy of Maryland and Virginia, Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 449,254, Dec. 13, 1982, Pat. No. 4,541,133. This application Jun. 21, 1984, Ser. No. 623,089

Int. Cl.[4] A47C *17/04, 19/00*

U.S. Cl. 5—13 **25 Claims**

1. A sofa bed, comprising:

a stationary framework;

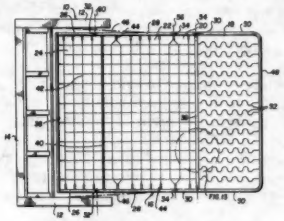
a foldable bed frame connected to and foldable into said framework, said foldable frame having an outer section pivotally attached to an intermediate section which is pivotally attached to a body section, the outer section overlying the body section in the folded position of the frame to form a seat deck;

said outer section having a plurality of individual seat support elements extending thereacross transversely to the axis of pivotal attachment of said outer section to said intermediate section, said individual elements being spaced apart in a direction parallel to said axis, and each of said individual elements being downwardly deflectable independently of the others when a person sits on said seat deck;

each of said individual elements comprising a sinuous spring wire, and said spring wires being arched and mounted so as to create a concavity adapted to receive a sofa seat cushion in the sofa form of said sofa bed;

said outer section comprising a frame defining a plane, the arch of each of said individual sinuous spring wires with respect to said plane being such as to cooperate with said sofa seat cushion to tend to prevent said seat cushion from sliding off of said outer section;

said arch of each of said individual sinuous spring wires with respect to said plane being such as to match the curvature



of a mattress folded into said sofa bed and compressed by said wires to the curvature of said seat cushion thereabove;

said arch of each of said individual sinuous spring wires with respect to said plane being such as to raise the feet of a user reclining on the bed form of said sofa bed above the plane of said outer section frame;

and said arch of each of said individual sinuous spring wires with respect to said plane being such, due to the compression of said mattress in the sofa form of said sofa bed, as to permit use of heavier gauge spring coils in said mattress, if said mattress is an inner spring mattress, than could be used if said elements in said outer section were contained in said plane.

4,584,728

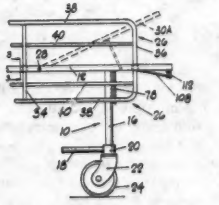
SAFETY LATCHES FOR SIDE RAILS AND BACK RESTS OF HOSPITAL STRETCHERS

Paul C. Tabbert, deceased, late of Bridgeman, Mich., and Rae M. Tabbert, executrix, 10743 California Rd., Bridgeman, Mich. 49106 assignor to Rae M. Talbert, Bridgeman, Mich.

Filed Oct. 11, 1983, Ser. No. 540,437

Int. Cl.[3] A47C *21/08;* A61G *7/06*

U.S. Cl. 5—72 **7 Claims**



1. In combination on a hospital stretcher having a top litter frame with side rails with uprights having in-turned lower ends pivoted inwardly from the sides of said frame and swingable outwardly and upwardly over the sides of the frame, and a back rest pivoted between the sides of said frame and swingable upwardly above one end of said frame, latch mechanisms

arranged to hold said side rails and said back rest in raised position comprising:

keeper bars with upwardly facing keeper surfaces secured to the inner sides of the sides of said frame and outwardly from the pivot of one of said uprights on each side of the frame,

latch members pivoted to the inturned ends of said uprights between the pivots of the upright and said keeper bars, said latch members having hooked ends engagable over said keeper surfaces,

spring means biasing the hooked ends of said latch members toward the outer portion of the upright on which they are mounted,

a latch release lever pivoted to the in-turned end of said upright between pivot connections of the upright to the litter frame and of the latch member of said in-turned end, said release lever having a sliding engagement with said latch member radially with respect to the latch member pivot,

a finger piece connected to said release lever and extending outwardly of the in-turned end of the upright on the opposite side of the pivot of the latch member from the hooked end of the latch member,

a prop pivotally connected to said back rest and depending therefrom, said prop having a plurality of downwardly facing keeper surfaces formed at spaced intervals therealong,

a third latch member pivotally mounted with respect to said litter frame and in spaced relation to said prop,

said latch member having a swinging end selectively engagable with keeper surfaces on said prop,

a further spring means having one end fixedly connected relative to said litter frame and its other end connected to said third latch member to bias the latch member toward said prop,

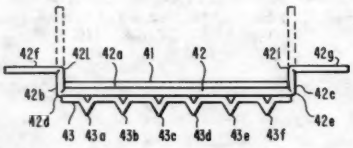
and a release member mounted at the underside of said litter frame at one end and connected to move said third latch member to released position against said further spring means.

4,584,729

DISPOSABLE FULL SPINAL IMMOBILIZATION BACKBOARD

Jess D. Roberts, 12875 Tibarand Dr., and George E. Wimpelberg, 1600 Fleener Ct., both of Evansville, Ind. 47711

Filed Apr. 20, 1984, Ser. No. 602,603
Int. Cl.[4] A61G *1/00*; A61F *5/04*
U.S. Cl. 5—82 R **6 Claims**



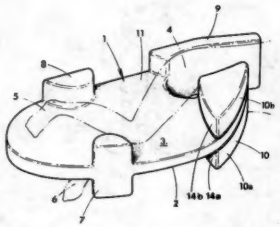
1. A disposable total spinal immobilization backboard comprising a panel of multiple ply corrugated material, said multiple ply corrugated material being impregnated with a waxing substance causing said material to be waterproofed and increasing the rigidity and strength of said material; one ply of said panel including two permanent longitudinal fold lines, each of said permanent longitudinal fold lines connecting a central horizontal portion of said ply with one of two opposing vertical portions of said ply, said ply further including two pivotable longitudinal fold lines, each of said pivotable longitudinal fold lines connecting one of said opposing vertical portions with one of two opposing extending wing portions of said ply, said extending wing portions being pivotable between first horizontally extending positions to facilitate storage and transfer of a patient onto said backboard and second vertically extending positions to facilitate strapping of a patient to said backboard and transport of an injured party on said backboard, said panel being sized to be about as long as and about as wide as an average person when said extending wing portions are in said second vertically extending positions; said disposable total spinal immobilization backboard being reinforced both laterally and longitudinally to allow a deflection of less than ½ inch when supporting a body weight of 300 pounds; said disposable total spinal immobilization backboard further comprising handhold means for receiving hands for the carrying of said backboard in the transporting of an injured party, said disposable total spinal immobilization backboard further comprising strap receiving means for securedly accepting strapping material for the immobilizing strapping of an injured party to said disposable total spinal immobilization backboard.

4,584,730

DEVICE FOR STABILIZING THE PELVIS OF A PATIENT LYING ON HIS SIDE

Eva Rajan, Stålstigen 8, S-582 58 Linköping, Sweden

PCT No. PCT/SE83/00432, § 371 Date Jul. 13, 1984, § 102(e) Date Jul. 13, 1984, PCT Pub. No. WO84/02268, PCT Pub. Date Jun. 21, 1984
PCT Filed Dec. 7, 1983, Ser. No. 631,435
Claims priority, application Sweden, Dec. 13, 1982, 8207119
Int. Cl.[4] A47C *20/00*; A61F *5/00*
U.S. Cl. 5—431 **18 Claims**



1. A device for stabilizing the pelvis of a patient lying on his side in a conventional flat bed, comprising a body which is generally disc-shaped, has two approximately parallel planar surfaces defining opposite sides thereof, is intended to be placed between two lower extremities of the patient, and has a cavity which extends from one edge of the body toward the center thereof and which conforms to and is somewhat bigger than the contour of the patient's pelvis as seen from the side, and including protruding parts which project outwardly from said planar surfaces on opposite sides of said body and can support the body parallel to and sufficiently far above the bed so that there is room for one of the patient's lower extremities between the bed and one of the planar surfaces which faces the bed, the other of the patient's extremities resting on the opposite planar surface, wherein a moving space for movement of the lower extremities exists between said protruding parts on each side of said body, and wherein said cavity has supporting surfaces which support the lumbar region on one side of the patient and the hip bone of the patient on the other side of the patient, whereby the pelvis is stabilized substantially at a right angle to the bed.

4,584,731

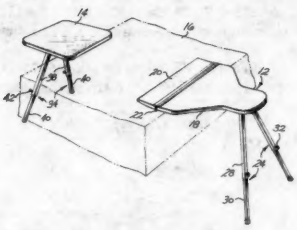
BED-RIDDEN PATIENT SUPPORT

Dennis L. Carter, 726 E. Ewing Ave., South Bend, Ind. 46613

Filed Sep. 10, 1984, Ser. No. 649,078
Int. Cl.[4] A47C *20/04*
U.S. Cl. 5—431 **5 Claims**

1. A support for a patient confined to a bed, said support

comprising a foot rest adapted to adjacently overlie a side of said bed, leg means extending from said foot rest for supporting said foot rest atop said bed, a torso rest adapted to adjacently overlie a side of said bed opposite said foot rest, leg means



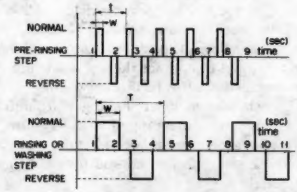
extending from said torso rest for supporting said torso rest atop said bed, said foot rest and torso rest constituting means for supporting said patient when turned ninety degrees in a horizontal plane upon said bed, said torso rest including first and second sections joined together by hinge.

4,584,732

WASHER/DEHYDRATER

Yoshio Kohsaka, Aichi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 28, 1985, Ser. No. 695,827
Claims priority, application Japan, Jan. 30, 1984, 59-14730
Int. Cl.⁴ D06F *23/04, 33/02*
U.S. Cl. 8—159 **10 Claims**



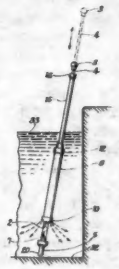
1. A method of washing/dehydrating laundry using a washer/dehydrater having a washing tub and a vessel-like stirrer accommodated in a lower portion of said washing tub comprising a washing step, a dehydrating step, a pre-rinsing step and a rinsing step, said washing and rinsing steps being performed by having said washing tub substantially stationary and rotating said stirrer forwards for a predetermined time and backwards for the predetermined time to thereby clean the laundry mainly with a combined effect of the friction of the laundry with the inner peripheral wall of said stirrer and frictional forces received by the laundry from the inner peripheral wall of an upper portion of said washing tub, said dehydrating step being performed by rotating said washing tub and stirrer in unison with each other in one direction at a high speed to thereby dehydrate the laundry, said pre-rinsing step being performed immediately before the rinsing step, performed after the dehydrating step, by rotating said stirrer forwards for a shorter time than the predetermined time and backwards for the shorter time.

4,584,733

SPA OR POOL CLEANING DEVICE

Fred R. Tietge, San Diego, and Ronald J. Sargent, Escondido, both of Calif., assignors to Saresearch Corporation, Escondido, Calif.

Filed Dec. 17, 1984, Ser. No. 682,747
Int. Cl.⁴ E04H *3/20*
U.S. Cl. 15—1.7 **9 Claims**



1. A totally self-contained hand operated device for cleaning the bottom and surface of bodies of water such as spas, pools, ponds and acquariums of debris, the device comprising:

an elongated tube having an open lower end;

a piston slidably mounted in the tube for drawing water and debris in through the open lower end;

means connected to the piston for reciprocating the piston in the tube;

strainer means mounted in the lower part of the tube for straining debris from water drawn into the tube;

a one-way check valve for trapping strained debris in the strainer means;

the piston including a one-way valve movable between a closed position during each upstroke of the piston and an open position during each downstroke of the piston for allowing water to flow past the piston during each downstroke of the piston;

an outer sleeve mounted coaxially around the tube and defining an evacuation chamber having means for expelling water near the lower part of the tube; and

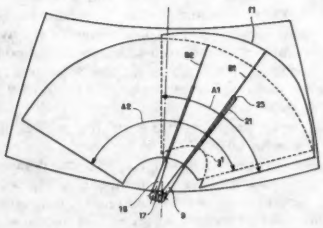
means defining an exit passageway for water from the upper end of the tube and into said evacuation chamber.

4,584,734

WINDSCREEN WIPER SYSTEM

André R. Leroy, Chaussée de Binche 64, 7030 Mons Saint-Symphorien, and Jean-Marie G. D. Flamme, Rue dela Délivrance 22, 7980 Beloeil Stambruges, both of Belgium

Filed Feb. 20, 1985, Ser. No. 703,479
Claims priority, application Belgium, Feb. 28, 1984, 5/5264
Int. Cl.⁴ B60S *1/24, 1/28*
U.S. Cl. 15—250.21 **3 Claims**



1. A windscreen wiper system comprising a frame, a motor

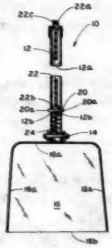
driven reducer, a bar drive mechanism and two windscreen wipers one of which has two controlled movements, one for wiping, the other for extension-retraction, characterized in that it comprises three coaxial shafts journalled to the frame, in that the arms of the two windscreen wipers are carried by two of these shafts which drive them with sweeping movements in the same direction, in that the extension-retraction is controlled from the third shaft driven with a reciprocating movement of the same frequency as the other two but in the opposite direction, and in that the drive mechanism comprises three rocking levers fixed respectively to each of the coaxial shafts as well as a bar, called main bar, pivotably connected to one of these rocking levers, called main rocking lever, coupled to each of the other two rocking levers, called secondary rocking levers, by means of a coupling link and further guided by a fourth rocking lever, called auxiliary rocking lever, hingedly connected to the frame, the assembly formed by the main bar, the main rocking lever and the auxiliary rocking lever forming an open kinematic chain, connected for pivoting at two points to the frame, driven by a link-crank system whose crank is fixed to the output shaft of the motor driven reducer and whose so-called auxiliary link pivotably connected on the one hand to the crank is pivotably connected on the other hand to one of these three elements forming the preceding kinematic chain.

4,584,735

DUSTPAN WITH A CONTROL HANDLE

Hyman Garber, Greenlawn, N.Y., assignor to Lambro Industries, Inc., Amityville, N.Y.

Filed Oct. 9, 1984, Ser. No. 658,755
Int. Cl.[4] A47L *13/52*
U.S. Cl. 15—257.7 **1 Claim**



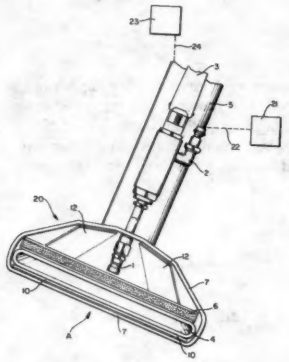
1. In a dustpan with a control handle of the type in the operation of which a dustpan pivotally connected adjacent a lower end of a control handle is selectively latched to have a first position extending laterally of said control handle during use and is unlatched to have a second position extending vertically thereof to discharge said dustpan and to facilitate the storage thereof, the improvements comprising said control handle having a hollow interior and slots on opposite sides adjacent the lower end thereof, a control rod operatively disposed for sliding movement in said hollow handle, a latching pin having an operative position oriented laterally of and attached to said lower end of said control rod with opposite ends thereof protruding from said slots of said control handle, a pin-engaging hook on said pivotally mounted dustpan adapted in said first laterally extending position of said dustpan to latch about said protruding opposite ends of said latching pin, an upper end on said control rod protruding from said control handle adapted to be actuated through descending movement so that said descending movement imparted thereto disengages said latching pin from said dustpan hook, and a spring seated beneath said lower end of said control rod so as to normally exert an upward spring bias thereagainst, whereby the weight of said laterally extended dustpan causes a pivotal traverse therein and provides said second position thereto, and the subsequent release of said control rod means causes the return thereof and of said latching pin to their original positions under spring urgency.

4,584,736

SURFACE CLEANING APPARATUS

Gottfried Gremminger, Sonnenstrasse 5, 9243 Jonschwil, Switzerland

Filed Jan. 25, 1984, Ser. No. 573,863
Claims priority, application Switzerland, Jan. 26, 1983, 422/83
Int. Cl.[4] A47L *11/30*
U.S. Cl. 15—322 **19 Claims**



2. An apparatus for cleaning walls, ceilings and stairs, said apparatus including a handheld unit which comprises:

(a) a discharge nozzle designed to be connected with a first source of pressurized cleaning material and arranged to direct the cleaning material against a surface being cleaned;

(b) a suction nozzle designed to be connected with a second source of suction and arranged to suction used cleaning material from the surface being cleaned;

(c) a stationary brush fixedly mounted between said nozzles and arranged to contact the surface being cleaned; and

(d) an enclosure entirely circumscribing said nozzles and said brush, said enclosure having a circumferentially complete, resilient end arranged to engage the surface being cleaned, and said resilient end having an opening arranged to expose said nozzles and said brush to the surface being cleaned.

4,584,737

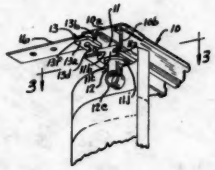
DRAPERY SUPPORT WITH SNAP-IN PENDANT AND PENDANT RETAINER CLIP

Thor Ohman, Madison, Wis., assignor to Graber Industries, Inc., Middleton, Wis.

Filed Oct. 16, 1984, Ser. No. 661,374
Int. Cl.[4] E05D *15/06*
U.S. Cl. 16—87.4 R **12 Claims**

1. A panel support system comprising, an elongated rod defining a track, carrier means mounted on the track for movement therealong and having a lower pendant support portion disposed below the track, a panel support pendant detachably and swivelly mounted on the pendant support portion, and a detachable pendant retainer clip for holding the pendant on the carrier, the pendant support portion having an underface and spaced side edges generally paralleling the path of movement of the carrier means along the track, the pendant support portion having slot means extending transverse to the direction of movement of the carrier means along the track and opening

at one of said side edges intermediate its ends and an upwardly facing pendant support shoulder at the inner end of said slot means, the panel support pendant having a neck portion receivable in said slot means and a head portion on the upper end of the neck portion engageable with said upwardly facing pendant support shoulder and supporting the pendant for swivelling movement relative to the pendant support portion of the carrrier means, the pendant retainer clip comprising a thin flat body having upwardly extending flanges along opposite side edges arranged to engage the opposite side edges of the pendant support portion to guide the clip when the clip is



moved along a clip installing path generally paralleling the direction of movement of the carrier means along the track into a pendant retaining position in which the body of the clip underlies the underface of the pendant support portion and the flanges of the clip extend along opposite side edges of the pendant support portion to prevent movement of the clip transverse to the clip installing path, the body of the clip having a notch in one end arranged to receive the neck portion of the pendant when the clip is moved into said pendant retaining position, and means for detachably holding said clip in said pendant retaining position.

4,584,738

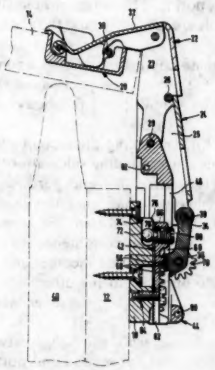
CROSSLINK HINGE WITH A GREATER OPENING OUTTHRUST

Reinhard Lautenschläger, Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Feb. 22, 1985, Ser. No. 704,184

Int. Cl.⁴ E05D *7/04*

U.S. Cl. 16—238 **8 Claims**



1. A crosslink hinge for hanging a door on a supporting wall of a furniture carcass, said hinge having a door-related part, and also a supporting-wall-related part adjustably fastenable to a mounting plate on the supporting wall, two elongated link arms joining said door-related part and said supporting wall-related part to each other, said arms being coupled to one another in a central area of said arms for rotation relative to one another, said arms each having two opposite ends, one end of each arm being articulated directly for rotation on one hinge part and the other end being coupled with the other hinge part, said supporting-wall-related part comprising a bottom piece to be fastened on the mounting plate, and a top piece guided for displacement on the bottom piece relative to the bottom piece towards and away from the door-related part, a swinging lever having one end pivotally coupled to said one end of the link arm articulated directly to the door-related part and another end pivotally connected to said top piece, and a gear segment formed on the another end of the swinging lever, said bottom piece having a rack section for meshing with said gear segment so that swinging movement of the gear segment relative to said rack section will transmit into movement of the top piece relative to the bottom piece.

4,584,739

HINGE WITH LIFTING-OUT PROTECTION

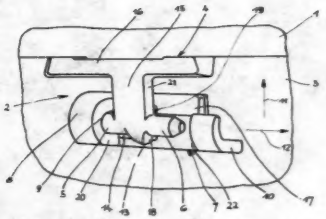
Karl-Heinz Könen, Remscheid, Fed. Rep. of Germany, assignor to Carl Sülberg GmbH & Co., Remscheid, Fed. Rep. of Germany

Filed May 11, 1984, Ser. No. 609,563

Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318404

Int. Cl.⁴ E05D *7/10*

U.S. Cl. 16—266 **5 Claims**



1. A hinge for lifting-out protection of a turnable and releasable side wall of a commerical vehicle on its chassis, comprising

a first hinge part mountable on said side wall and provided with a first pivot pin having a substantially horizontal longitudinal axis and extending in a first axial direction, a second pivot pin having a substantially horizontal longitudinal axis and extending in a substantially opposite second axial direction, said pivot pins having free ends spaced from one another by a first distance, and a collar extending radially beyond and over a part of the periphery of said first pivot pin, said longitudinal axes of said pivot pins being arranged in alignment with one another, said pivot pins having a connecting region, a web being formed onto said connecting region, a base plate provided on said first hinge part and connected with said pivot pins via said web; and

a second hinge part mountable on said chassis and having a recess, a substantially horizontal opening, and a substantially horizontally extending shell which is open upwardly and is spaced from said opening by a second distance, said second distance being smaller than said first distance,

said hinge parts being formed so that in an upwardly turned position of the side wall and over a downward angular turning region of the side wall said first hinge part is located in a first axial end position in which said first pivot pin of said first hinge part extends into said opening of said second hinge part and said second pin free end is axially spaced from said shell so that said first hinge part and therefore the side wall cannot be lifted out, in said first axial end position said collar of said first hinge part is located in said recess of said second hinge part with a limiting surface on the collar in abutment with a limiting

surface in the recess so that said first hinge part and therefore the side wall cannot move axially in said second axial direction,

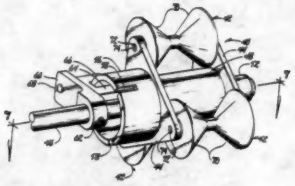
whereas, when the side wall is turned down beyond said angular turning region, said collar of said first hinge part disengages from said recess of said second hinge part and said first hinge part can be moved to a second axial end position in which said first pivot pin of said first hinge part is completely withdrawn from said opening of said second hinge part and said second pivot pin of said first hinge part is supported from below in said upwardly open shell of said second hinge part and an abutment surface on the web which faces toward said shell being in abutment with an abutment surface on the side of the shell so that the side wall is prevented from falling down and at the same time said first hinge part can be removed from said second hinge part upwardly thereby lifting the side wall out.

4,584,740

LINK SEPARATOR

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Aug. 16, 1984, Ser. No. 641,275
Int. Cl.[4] A22B *0/00*
U.S. Cl. 17—1 F **14 Claims**



8. An apparatus for separating a plurality of links interconnected by twisted casing sections, comprising:

a support frame including a cutting zone having opposite upstream and downstream sides,

a conveyor means on said frame for sequentially conveying links to and through said cutting zone,

a knife movably supported in said cutting zone for severing the stretched twisted casing section,

a knife drive means,

a sensor positioned on the upstream side of said cutting zone for detecting the presence of a twisted casing section between a pair of links,

said sensor being operatively connected to said knife drive means for cutting movement of the knife through the sensed twisted casing section upon movement of said twisted casing section downstream from said sensor to said cutting zone,

said sensor comprising a rotatable sensor frame, a plurality of members rotatably mounted upon said sensor frame at a common radius from the axis of rotation, said members successively engage said links and said twisted casing sections thereby rotating said sensor frame,

a collar having a plurality of openings therein is secured to said sensor frame for rotation therewith about said axis of rotation, a light source and a photocell being mounted adjacent said collar at least one of said light source or said photocell being located inside of said collar such that said collar normally blocks said beam of light from being sensed by said photocell, said openings aligning with said light source and said photocell when said sensor frame rotates whereby said photocell senses said beam of light;

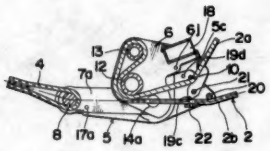
means connecting said sensor and said knife drive means to actuate said knife to move said knife through said twisted casing section downstream from said sensor when said sensor frame is rotated.

4,584,741

CLASPING DEVICE

Akira Kawahara, Kagawa, and Akihiko Chiba, Takamatsu, both of Japan, assignors to Ryusyo Industrial Co., Ltd., Osaka, Japan

Filed Jul. 18, 1985, Ser. No. 756,381
Claims priority, application Japan, Jul. 25, 1984, 59-156292
Int. Cl.[4] A44B *21/00*
U.S. Cl. 24—68 CD **3 Claims**



1. In a clasping device which comprises a body having a pair of sidewalls facing each other,

a lever having a pair of sidewalls facing each other, a strap turning shaft and strap pressing shaft respectively extending between the pair of sidewalls, and

a pair of links respectively having first end portions pivotally connected, by means of pivot shafts, with the corresponding sidewalls of the lever at positions externally of the lever, second ends portions pivotally connected with first end portions of the corresponding sidewalls of the body at positions internally of the body, and adapted to be connected with a first hook connected by means a connecting member,

a strap having a first end portion adapted to be connected with a second hook, a second end portion connected with the lever so as to be inserted between the pair of sidewalls of the lever externally, turned around the strap turning shaft after having past the strap pressing shaft and led to the outside past the strap pressing shaft,

whereby, when the lever is turned from a release position to a tightening position, the strap turning shaft and the strap pressing shaft are turned around the pivot shafts to tighten the strap,

the improvement comprising a first connecting shaft for connecting the second end portions of the links with the corresponding sidewalls of the body at predetermined positions,

a shaft means for connecting the second end portions of the links with the corresponding sidewalls of the body at such positions between the first end portions of the links and the first connecting shaft that the shaft means takes a position offset from a substantially straight tension line, formed when the strap is tightened and passing through axes of the first connecting member and the pivot shafts, toward a side opposite to the other side where the strap pressing shaft locates when the lever takes the tightening position,

a second connecting shaft extending between the pair of sidewalls of the body at second end portions opposite to the first end portion, and

a claw member rotatably mounted on and between the pair of sidewalls of the body at the second end portions so that the strap passes through a space between the claw member and the second connectiong shaft and so that the claw member may rotate in a direction due to slight movement of the strap externally of the body so as to press the strap against the second connecting member to hold the strap therebetween.

4,584,742

TENSIONING DEVICE FOR TENSIONING LINES, PARTICULARLY CHAINS OR BELTS

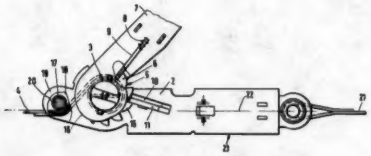
Herrn H. Speich, Hüttlingen, Fed. Rep. of Germany, assignor to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co., Aalen, Fed. Rep. of Germany

Filed Dec. 3, 1984, Ser. No. 677,165

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3344486

Int. Cl.[4] B25B *25/00*

U.S. Cl. 24—68 CD 7 Claims



1. A tensioning device for tensioning lines, particularly chains or belts, having a rotatable drive element serving to wind up the tensioning line, at least one ratchet wheel connected integrally in rotation to the latter and exhibiting directionally oriented notches, and a pivot lever serving to introduce the rotary movement into the drive element, on which a drive pawl cooperating with the ratchet wheel is mounted slidably counter to the action of a spring and which is provided with at least one control cam to transfer a blocking mechanism associated with the ratchet wheel into an inoperative position, whilst the notches of the ratchet wheel are shaped so that they are retained firmly by the detent pawl during movement of the pivot lever in one direction, whereas during the movement of the pivot lever in the opposite direction they are entrained by the latter via the drive pawl, wherein the notches (6) of the ratchet wheel (5) are shaped so that the notch back (15) of the respective notch (6) in engagement with the detent mechanism (10, 11) in the blocked position of the ratchet wheel (5) is remote from the free end of the pivot lever (7), said blocking mechanism (10, 11) having a plurality of blocking elements (10, 11) which can be brough individually into engagement with the notches (6) of the ratchet wheel (5), said blocking elements (10, 11) being formed by sliders movable in reciprocation counter to the action of springs (12, 13).

4,584,743

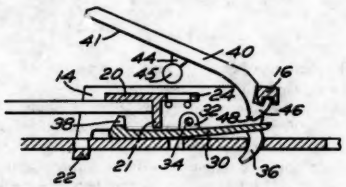
BELT BUCKLE

Anthony S. Calabro, 22 Oaklawn Ave., Cranston, R.I. 02920

Filed Sep. 20, 1985, Ser. No. 778,535

Int. Cl.[4] A44B *11/00, 11/20*

U.S. Cl. 24—180 2 Claims



1. A belt buckle for use with a belt having a first and second end with a first end having at least one aperture extending therethrough, said buckle comprising a separate body and top member adapted to be interconnected with each other, said body member having sides plates connected by a cross bar at one end and a cam bar at the other end, a locking plate pivoted to the side plates and carrying a jaw at one end and a hook pin at the other end, one end of the belt passing over the strap with a hole in the belt engagable by the hook pin, a shelf between the side plates at a position to be aligned with the jaw of the locking plate, and a top member having one end detachably engagable with the cam bar and with a caming protrusion engagable with the locking plate whereby when the butt end of the belt is passed between the jaw and the shelf, pivoting of the top member will rock the locking plate causing the jaw to engage the belt against the shelf and means holding the top member in position.

4,584,744

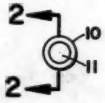
APPARATUS FOR ASSEMBLING AND FORMING PARTS

Allan D. Haines, Tiffin, Ohio, assignor to National Machinery Co., Tiffin, Ohio

Filed Sep. 13, 1982, Ser. No. 417,078

Int. Cl.[4] H01T *13/20, 21/02*

U.S. Cl. 29—33 K 15 Claims



1. An assembly machine for assembling first and second parts comprising a frame, an assembly position on said frame, first and second feed chutes along which first parts move, a shuttle operable to alternately receive a first part from said first feed chute and to transport said first part to said assembly position and thereafter receive another first part from said second feed chute and transport said first part therefrom to said assembly position, and second part feed means operable to position a second part at said assembly position each time said shuttle delivers a first part thereto, and assembly means operable to assemble said first and second parts at said assembly position, said shuttle operating at a cyclic speed equal to one-half the cyclic speed of said second feed means while providing a first part for assembly with each second part delivered by said second feed means.

4,584,745

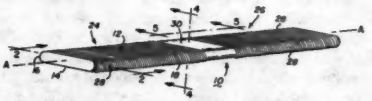
DOUBLE ANGLED PRECISION FILE

Arvie I. Seiber, Redwood Creek, Blue Lake, Calif. 95525

Filed Feb. 6, 1984, Ser. No. 577,564

Int. Cl.[4] B23D *71/00*

U.S. Cl. 29—78 3 Claims



1. A file for cutting metal of chainsaw chisel-cut teeth comprising:

a flat metal blank having a first and a second terminal end and including an upper and a lower flat surface, said upper and lower flat surfaces including a multiplicity of single cut teeth cut thereinto and with each tooth extending the full width of the blank, said teeth being cut perpendicular to a longitudinal axis of said blank, and parallel to each other, and extending from a center portion of said blank facing toward said first terminal end and further extending from said center facing in an opposite direction toward said second terminal end in a tandem configuration, said blank further including a left and a right hemispherical side face whereby a flattened oblong cross-section is formed with said upper and lower flat surfaces, said hemi-

spherical sides faces including a multiplicity of teeth cut thereinto, said side face teeth being cut at an angle from a vertical axis of approximately twenty degrees, and extending from said center portion of said blank toward said first end, and further extending from said center portion toward said second terminal end in a tandem configuration, said angle and direction of cut being uniform along the file's longitudinal axis;

whereby a double-ended file is formed, having teeth adapted for an extensor cutting stroke on either end.

4,584,746

DEVICE FOR DETECTING CRACKS IN STEEL SLABS LEAVING CONTINUOUS CASTING

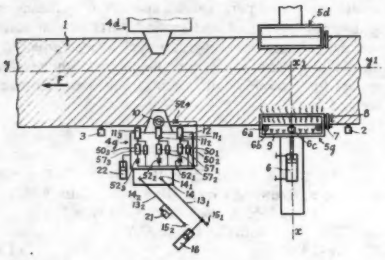
Alain Tivolle, Martigues; Bernard Roumegoux, Entressen; Gérard Delhaye, Istres; Yves Codur, Marseille, and Bernard Mittaine, Istres, all of France, assignors to Societe Lorraine et Meridionale de Laminage Continu - SOLMER, Puteaux, France

Filed Dec. 28, 1983, Ser. No. 566,194

Claims priority, application France, Jan. 28, 1983, 83 01511

Int. Cl.[4] B08B *3/02*; G01R *33/12*

U.S. Cl. 29—81 B **13 Claims**



1. A device for detecting cracks in steel slabs leaving a continuous casting installation by means of sensors employing eddy currents, which comprise an induction coil which is supplied with A.C. voltage and means for detecting variations in said voltage which indicate the presence of a crack, wherein said device comprises two crack detection units which are disposed on either side of the passage of the slabs, each unit comprising one vertical sensor which is maintained above the upper face of the slab, in the vicinity of an edge thereof, and a plurality of horizontal sensors which are located at different levels and which are maintained in the vicinity of a lateral face of the slab, two descaling and cooling units which are located on either side of the passage of the slabs, upstream of said detection units, and each descaling and cooling unit is mounted on a mobile frame which is displaced transversely with respect to the slab by a jack, and which bears one or more vertical axis rollers which are maintained applied against the side of the slab, descaling nozzles which project against the lateral face and against a band on the edge of the upper face of the slab jets of water at very high pressure, of the order of 150 bars, and cooling nozzles which spray the lateral face and the edge of the upper face of the slab.

4,584,747

IRONING/MANGLE ROLLER

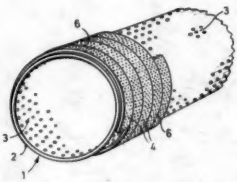
Helmüt Katterbach, Bergweg 7, 5202 Hennef 1-Berg; Klaüs Schröter, Worms, and Johannes Daniel, Dormagen, all of Fed. Rep. of Germany, assignors to Helmut Katterbach, Fed. Rep. of Germany

Filed Sep. 6, 1985, Ser. No. 773,247

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1984, 3433780

Int. Cl.[4] B30B *3/00, 3/02*

U.S. Cl. 29—121.5 **19 Claims**



1. An ironing roller particularly adapted for use in a heated trough mangle comprising a hollow cylindrical drum having a plurality of perforations therethrough thereby forming a generally screen-type perforated shell, a gas permeable padding layer formed of intrinsic elastic material, said padding layer being defined by at least one strip of said material being wrapped helically about said shell, said elastic material being thermally resistant resilient silicon rubber having a Shore hardness generally within the range of 50 to 75, and a mesh-like inlay within said at least one strip.

4,584,748

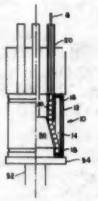
LOADING BALLS THROUGH RESILIENT CAGES IN LINEAR BEARINGS

Andrew Henn, Monroe, Conn., assignor to Incom International Inc., Pittsburgh, Pa.

Filed May 2, 1984, Ser. No. 606,172

Int. Cl.[4] B21D *53/12*; B21H *1/12*

U.S. Cl. 29—148.4 A **13 Claims**



1. The method of loading balls through resilient cages of linear bearings, comprising the steps of:

(A) positioning plural tube ends adjacent plural slots, said slots having deformable resilient edges behind which is located grooves for balls; and

(B) positioning a conical surface adjacent said tubes, whereby said tube ends are located between the slots and the conical surface; and

(C) feeding balls through the plural tubes, whereby said balls move through the tubes and out the ends to roll between the conical surface and the slots; and

(D) simultaneously pressing the balls through the tubes, whereby the balls roll along the conical surface and the slots to a point where the surface and slots meet whereupon the resilient edges deform and the balls enter the grooves.

4,584,749

METHOD FOR MAKING CAGES FOR ROLLING BEARINGS

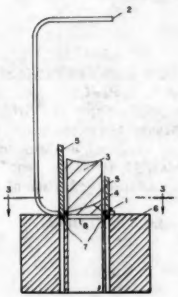
Peter Horling, Mainberg; Norbert Klupfel, Hambach; Herbert Dobhan, Bergrheinfeld, and Volker Dibal, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 19, 1984, Ser. No. 632,320

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326121

Int. Cl.[4] B21D *53/12;* **B21K** *1/05;* **B26D** *3/00*

U.S. Cl. 29—148.4 C **1 Claim**



1. A method for making cages for rolling bearings from tubular members, the cage comprising a pair of axially spaced circumferentially extending ring members and a plurality of cross pieces connecting the ring members and circumferentially spaced to define pockets for the rolling elements consisting of the steps of stamping one of the pockets from the tubular member and simultaneously trimming by means of punching elements, the tubular member at axially spaced locations on either side of the pocket to form annular ring portions of the cage and rotating the tubular member and repeating the stamping and trimming steps until the cage is completely formed, the punching elements having a predetermined dimension in the peripheral direction equal to at least the width of a pocket and the width of a cross piece so that the trimming cuts overlap during the cage-forming process.

4,584,750

ENCLOSED TYPE COMPRESSOR AND METHOD FOR ASSEMBLING THE SAME

Masao Ozu, Fuji, and Tsuneo Monden, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1985, Ser. No. 706,624

Claims priority, application Japan, Feb. 28, 1984, 59-36482

Int. Cl.[4] B23P *15/00;* **B23Q** *16/00;* **G01B** *3/00, 5/14*

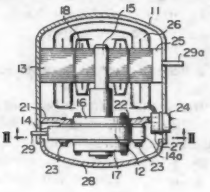
U.S. Cl. 29—156.4 R **6 Claims**

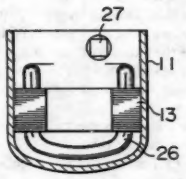
1. A method for assembling an enclosed type compressor of the type comprising a casing having an opening formed at at least one end thereof, an electric motor having a stator and a rotor, said stator being secured to an internal surface of said casing, a compressor pump assembly also provided in said casing and driven by said electric motor through a driving shaft, and a center-adjusting plate having an outer periphery secured to an internal surface of said casing and having a through hole formed at a central portion thereof, said method comprising the steps of:

inserting said stator of said electric motor into said casing through said opening and securing said stator to the internal surface of said casing;

inserting said center-adjusting plate into said casing through said opening and securing an outer periphery thereof to the internal surface of said casing after said center-adjusting plate is disposed in perpendicular to the central axis of the internal surface of said stator;

coupling said rotor of said electric motor to the driving shaft of said compressor pump assembly; and





inserting said compressor pump assembly into said casing together with said rotor, and securing said compressor pump assembly to said center-adjusting plate after the position of said compressor pump assembly is adjusted such that a central axis of said rotor aligns with a central axis of the internal surface of said stator.

4,584,751

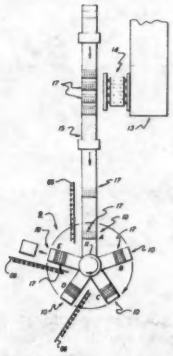
APPARATUS FOR ASSEMBLING FIN PLATE HEAT EXCHANGERS

Kenneth P. Gray, East Syracuse, and James E. Greever, DeWitt, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,097

Int. Cl.[4] B23P *15/26*

U.S. Cl. 29—157.3 C **20 Claims**



1. A method of mounting hairpin tubes in a fin pack unit of the type wherein flat heat exchanger plates are stacked between a pair of tube sheets and parallel rows of tube receiving holes pass through the unit between the tube sheets that includes the steps of

automatically loading the hairpin tubes into a tube magazine,

locating the loaded magazine adjacent to one of the tube sheets of the unit so that the tubes are axially aligned with the parallel rows of tube receiving holes,

driving the hairpin tubes from the magazine through the parallel rows of tube receiving holes in said unit so that the open ends of the tubes extend a predetermined distance beyond the other of said tube sheets,

forming radially expanded bells in the extended ends of the tubes,

clamping the bells to prevent the open ends of the tubes from moving, and

expanding the walls of the tubes outwardly into contact against the fin plates and tube sheets while the tube ends are clamped in a fixed position.

8. Apparatus for automatically mounting hairpin tubes in a fin pack unit of the type wherein flat heat exchanger plates are stacked between a pair of tube sheets and parallel rows of tube receiving holes are formed in the unit which pass between the tube sheets that includes

a tube magazine for locating the hairpin tubes in axial alignment with the parallel rows of tube receiving holes formed in one of the tube sheets of the unit,

means to drive the tubes from the magazine through the tube receiving holes to locate the tube ends of the tubes a predetermined distance beyond the other of said tube sheets,

a belling means for forming radially expanded bells in the extended ends of the tubes,

clamping means for securing the belled end of the tubes against movement, and

expanding means for moving a series of expanding tools into the tubes through the clamped ends thereof to expand the walls of the tubes into contact with the tube sheets and plate fins of the unit.

4,584,752

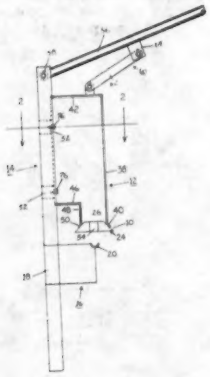
PAINT ROLLER COVER STRIPPER

Charles T. Fuentes, 5886 Leon Ave., Scotts, Mich. 49088

Filed Nov. 2, 1984, Ser. No. 667,576

Int. Cl.⁴ B23P *19/04*

U.S. Cl. 29—234 **6 Claims**



1. A paint roller cover stripper for stripping off the paint-holding cover from the spindle of a paint roller which has a laterally-projecting handle, comprising a hollow stripping head having, an inner surface in the shape of a frustoconical section of a cone the base and top of which section are formed by parallel planes substantially normal to the axis of the cone, the base of said hollow stripping head having an inside diameter larger than the outside diameter of said cover and the top of said hollow stripping head having an inside diameter such that it will slip over said spindle but not over said cover; a radial slot in said hollow stripping head which is wide enough to pass said handle which projects laterally from said spindle; and force-transmitting means affixed to said hollow stripping head; said hollow stripping head being adapted to be passed over said laterally-projecting handle by virtue of the radial slot therein to a position where the inner conical surface of said hollow stripping head rests against the end edge of said cover adjacent to said laterally-projecting handle with said roller head centered therein, whereby application of force to said hollow stripping head causes it to move axially down said spindle to strip said cover therefrom.

4,584,753

APPARATUS FOR CONNECTING SHEET METAL PIECES

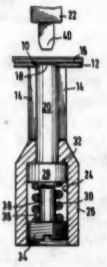
Gerd-Jürgen Eckold, Silberhutte 11, FRG-3424, St. Andreasberg, and Hans Maass, Germelmannstr. 12, FRG-3422, Bad Lauterberg, both of Fed. Rep. of Germany

Filed Mar. 19, 1985, Ser. No. 713,678

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 8408795[U]

Int. Cl.⁴ B23P *11/00*

U.S. Cl. 29—243.5 **6 Claims**



1. An apparatus for connecting a first piece of sheet metal to a perforated second piece of sheet metal with connecting joints being formed through at least some of said perforations, the apparatus comprising:

a male die and a female die adapted to be mounted in a press device for relative reciprocation toward and away from each other,

said male die cooperating with said female die upon actuation of said press device to force material of said first piece through said perforation,

said female die having an anvil cooperating with said male die for swaging said forced-through material and having further support members juxtaposed to said anvil and adapted to support said second piece and to flex away from said anvil when displaced by swaged material,

said male die having an operating surface facing said anvil and shaped with an exterior contour similar to, but smaller than the contour of said perforation, said contour being dimensioned such that forced-through material will not be severed from said first piece sheet metal, and

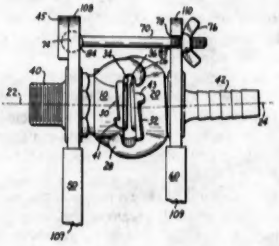
said anvil having a head portion contoured complimentary to the shape of said perforation, said female die comprising biasing means mounted to bias said anvil into a preparatory position in which its head portion protrudes beyond said support members and from which the anvil is displaceable into a lowered swage position in which the anvil is rigidly supported and said support members protrude upwardly beyond said head portion by a distance smaller than the thickness of said first piece of metal sheet.

4,584,754

INSTALLER FOR TWIST LOCK AIR FITTING

Bela A. Bagoly, 620 S. Rossmore Ave., Los Angeles, Calif. 90005

Filed Aug. 17, 1984, Ser. No. 641,742
Int. Cl.[4] B25B 7/22
U.S. Cl. 29—268 2 Claims



1. In connection with a twist lock air fitting having first and second interlocking members with each member defining a typically cylindrical passage therethrough, each passage, in turn, defining a central axis therethrough, and, each interlocking member having at least two claws thereon which pass over locking tabs and interlock with locking flanges on the opposite interlocking member and each interlocking member having a sealing means to provide an airtight, high pressure interlocking between the interlocking members, an apparatus for installing and disengaging the twist lock air fitting comprising:

a first lever operating gripping means securely attachable to the first interlocking member for providing a torque force to rotate the first interlocking member about its central axis and defining a plane;

a second lever operating gripping means securely attachable to the second interlocking member for providing a torque force to rotate the second interlocking member about its central axis and defining a plane.

an interconnecting bar having a ball attached to its first end and incorporated into an area defining a socket in the first lever operating gripping means for securely receiving the ball to allow the interconnecting bar to rotably tilt relative to the plane defined by the first lever operating gripping means;

means for attaching the second end of the interconnecting bar to the second lever operating gripping means which allows the interconnecting bar to rotably tilt relative to the plane defined by the second lever operating gripping means;

with the first and second interlocking members placed together, their central axis substantially colinear and their claws facing one another, with the first and second lever operating gripping means securely attached to the first and second interlocking members, respectively, and with the interconnecting bar attached between the first and second lever operating gripping means, the installing of the first and second interlocking members of the twist lock air fitting being accomplished by providing continuous force to the first and second lever operating gripping to press together the first and second interlocking members until the claws of each pass the locking tabs of the locking flanges on the opposite interlocking member while rotating the first and second lever operating gripping means in opposite rotations about the interlocking members' central axis until the claws of the first and second interlocking members seat in their locked positions over the locking flanges on the opposite interlocking member; and,

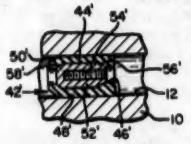
the disengagement of the twist lock air fitting being accomplished by providing continuous force to the first and second lever operating gripping means to press together the first and second interlocking members until the claws of each pass the locking tabs of the locking flanges on the opposite interlocking member while rotating the first and second lever operating gripping means in opposite rotations about the interlocking members' central axis, which rotations are reversals of the rotations required to install the first and second interlocking members, until the claws on the first and second interlocking members become disengaged from the locking flanges of the opposite interlocking member.

4,584,755

METHOD OF PLUGGING A HOLE IN AN OBJECT

Lynn Lundquist, 10833 NE. Russell St., Portland, Oreg. 97220

Filed Nov. 7, 1983, Ser. No. 549,294
Int. Cl.[4] B23P 11/02
U.S. Cl. 29—451 6 Claims



1. A method of plugging a hole in an object comprising:

(a) inserting into a hole a substantially cylindrical, flexible sleeve having an outside radial dimension slightly less than the dimension of the hole, and having a substantially cylindrical longitudinal bore therethrough;

(b) inserting into the hole, separately from the sleeve, a substantially cylindrical core member having a radial dimension slightly larger than the bore of the sleeve;

(c) locating the sleeve at the point in the hole where the plug is desired and supporting it at that location; and

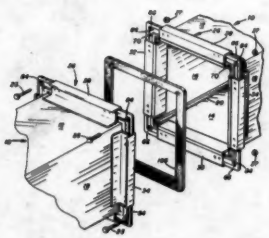
(d) longitudinally interengaging the core member into the sleeve which radially expands the sleeve into sealing engagement with the hole wall, the core member being located entirely within the sleeve and supported in a state of non-frictional stable equlibrium.

4,584,756

FLANGE TYPE DUCT JOINT ASSEMBLY AND SEAL ARRANGEMENT THEREFOR

Peter J. Arnoldt, Puce, Canada, assignor to Ductmate Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 327,934, Dec. 7, 1981, Pat. No. 4,508,376, which is a continuation of Ser. No. 933,179, Aug. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,644, Jan. 26, 1978, Pat. No. 4,218,079. This application Dec. 17, 1984, Ser. No. 682,339
Int. Cl.[4] B23P 19/00; F16L 19/03
U.S. Cl. 29—526 R 9 Claims



1. A method for connecting the end portions of generally rectangular duct sections comprising the steps of,

positioning the end portions of a pair of generally rectangular duct sections in adjacent relationship,

positioning a plurality of duct connecting flanges in end to end rectangular relationship,

inserting the legs of L-shaped corner pieces into openings of corner piece receiving portions and the adjacently positioned end portions of the duct connecting flanges to connect the duct connecting flanges and form a generally rectangular frame,

extending the end portions of the pair of duct sections into openings of duct receiving portions of the duct connecting flanges of the rectangular frame,

positioning a gasket member between a pair of the rectangular frames in abutting relation with the duct connecting flanges and the corner pieces,

connecting said pair of rectangular frames, and

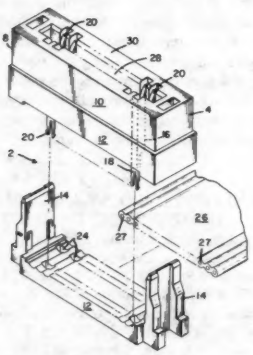
projecting the corner edge portions of the duct section end portions beyond the corner pieces and into the gasket member to deform a surface of said gasket member by said corner edge portion and form a seal at the corner edge portions of the duct sections between the connected duct connecting flanges.

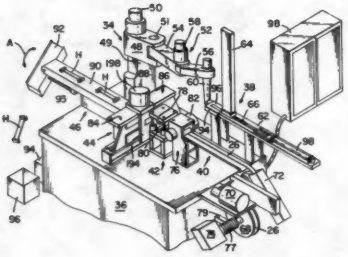
4,584,757

ASSEMBLY FOR CONNECTING ELECTRICAL CONNECTORS TO FLAT MULTICONDUCTOR CABLE

Daniel T. Adlon, Swatara; Edward A. Bianchi, Hummelstown; Neil F. College, Elizabethtown, and George D. Reuss, Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 25, 1985, Ser. No. 704,834
Int. Cl.[4] B23P *23/00*; H01R *43/00*
U.S. Cl. 29—564.6 **20 Claims**





1. An assembly for connecting to the conductors of a flat multiconductor cable, electrical connectors having electrical terminals provided with cable conductor-receiving portions, the assembly comprising:

a connector pickup station;

a press having platens;

a means for feeding the cable intermittently in a feed direction, between said platens;

a connector transfer nest for releasably retaining an electrical connector therein and for receiving the cable, the nest having means movable by said platens, to insert the conductors of the cable into the conductor-receiving portions of the terminals of the connector, and subsequently to release the connector;

a robot having an arm carrying the transfer nest, the arm being movable to locate the nest at the pickup station and to transfer the nest to a position between said platens;

means at the pickup station for feeding a connector into the nest when the latter has been located at the pickup station; and

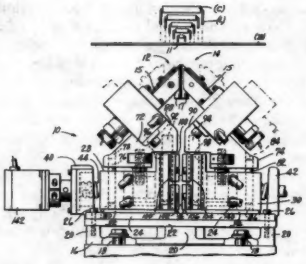
means for actuating the press to cause the platens to cooperate with said movable means of the nest, to insert the cable conductors into said conductor-receiving portions when the nest is positioned between the platens, and then to release the connector from the nest thereby to allow the nest to be withdrawn from the press by the robot.

4,584,758

CUT-CLINCH MECHANISM

Rodney P. Jackson, Auburn, N.H., assignor to Emhart Corporation, Farmington, Conn.

Filed Sep. 4, 1984, Ser. No. 647,342
Int. Cl.[4] B21F *1/00*
U.S. Cl. 29—566.3 **10 Claims**



1. A mounting for a cut-clinch mechanism for cutting and forming electrical component lead wires that extend through openings in a printed circuit board to secure the component to the board, comprising:

a. a support base member;

b. a pair of cut-clinch head assemblies adapted to receive the lead wires and cut and form the lead wires underneath the board;

c. mounting means for positioning said head assemblies on said base member for movement of said head assemblies on a U-axis toward and away from one another to accommodate variable spacing of the component lead wires;

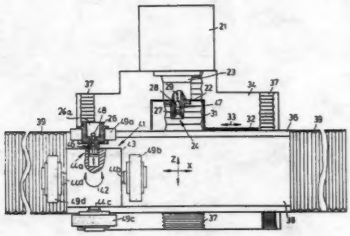
d. support means carried on said mounting means for movement on a vertical axis toward and away from the board; and

e. said support means including separate elevator means for each of said head assemblies to adjust the vertical spacing between each of said head assemblies and its mounting block.

4,584,759
GRINDING MACHINE WITH MAGAZINE FOR SPARE GRINDING WHEELS

Ralf Bleich, Lüneburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Handburg, Fed. Rep. of Germany

Division of Ser. No. 455,884, Jan. 4, 1983, Pat. No. 4,528,743.
This application Feb. 13, 1985, Ser. No. 701,143
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201206; Switzerland, Dec. 6, 1982, 7070/82
Int. Cl.[4] B23Q *3/157*
U.S. Cl. 29—568 35 Claims

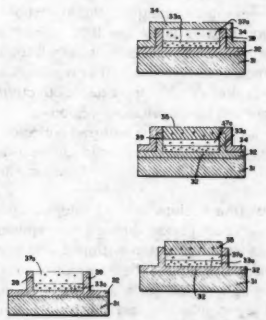


1. In a grinding machine, the combination of a rotary tool spindle having first retaining means for releasably holding a tool; a magazine including at least one annulus of tool carriers each having a substantially horizontal axis and each including second retaining means for releasably holding a tool; means for indexing said magazine about a predetermined substantially vertical axis, said annulus of carriers having a center located on said predetermined axis; a work table movably supporting said magazine; and means for respectively moving said table and said spindle in first and second directions at right angles to one another.

4,584,760
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A POLYCRYSTALLINE SILICON LAYER

Takeshi Okazawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,733
Claims priority, application Japan, Jun. 27, 1983, 58-115523
Int. Cl.[4] H01L *21/283*
U.S. Cl. 29—571 3 Claims

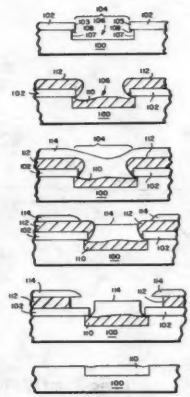


1. A method of manufacturing a semiconductor device comprising the steps of forming an insulating film on a semiconductor substrate, forming a first polycrystalline silicon film on the surface of said insulating film, forming a second polycrystalline silicon film having a lower impurity concentration than said first polycrystalline silicon film on the surface of said first polycrystalline silicon film and less than 10^{21} cm^{-3}, patterning both said first and second polycrystalline silicon films into a predetermined shape, forming a metal film on said second polycrystalline silicon film and reacting said metal film and said second polycrystalline silicon film to form a metal silicide layer.

4,584,761
INTEGRATED CIRCUIT CHIP PROCESSING TECHNIQUES AND INTEGRATED CHIP PRODUCED THEREBY

Andrew L. Wu, Shrewsbury, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed May 15, 1984, Ser. No. 610,337
Int. Cl.[4] H01L *21/76*
U.S. Cl. 29—571 29 Claims



1. A method of forming an integrated circuit chip on a substrate of a first conductivity type comprising the steps of:

A. depositing an insulation layer and a second layer over a surface of the substrate;

B. defining active device regions and removing portions of the second layer in the field regions to produce windows in the second layer in the field regions;

C. impregnating the surface of the substrate in the field regions with an implant having the first conductivity type to provide a field implant;

D. depositing a masking material in the windows in the second layer to provide a mask defining the field regions;

E. removing the remainder of the second layer and the portion of the insulation layer exposed by the removal of the second layer thereby exposing the surface of the substrate to provide the active device regions, the remaining portion of the insulation layer comprising a field insulation layer; and

F. removing the masking material from the field insulation layer; thereby providing a field implant in the substrate.

4,584,762

LATERAL TRANSISTOR SEPARATED FROM SUBSTRATE BY INTERSECTING SLOTS FILLED WITH SUBSTRATE OXIDE FOR MINIMAL INTERFERENCE THEREFROM AND METHOD FOR PRODUCING SAME

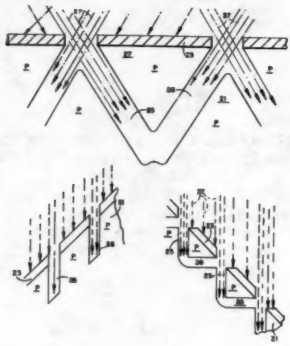
Sidney I. Soclof, San Gabriel, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

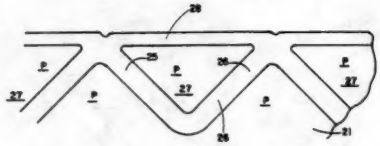
Continuation-in-part of Ser. No. 239,750, Mar. 2, 1981. This application Dec. 5, 1983, Ser. No. 558,073

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.[4] H01L *21/265, 21/302*

U.S. Cl. 29—577 R 6 Claims





1. A method for producing an array of VLSI dimensioned NPN type lateral transistors formed on a silicon substrate doped P-type, comprising the steps of:

forming a plurality of first sidewalls of pairs of intersecting slots in spaced apart relation across the substrate defining semi-arrays of V shaped intermediate regions which will become transistors;

oxidizing the substrate and intermediate regions to fill said slots and cover the surface of the substrate through which they were made;

forming a plurality of second sidewalls of orthogonal slots relative to said pairs of slots dividing the semi-arrays of regions into individual transistor active regions;

N+ doping each of said active regions via said second sidewalls;

driving in said doping to comprise emitter and collector regions on respective sides of original P substrate comprising the base regions;

further oxidizing said substrate to insure that all slots are filled and insure total peripheral oxide isolation of each transistor active region; and,

forming metallization patterns in electrical connection with the respective emitter, base and collector regions.

4,584,763

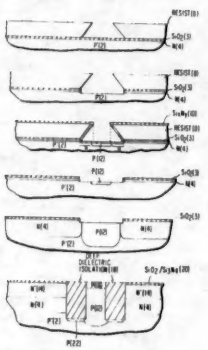
ONE MASK TECHNIQUE FOR SUBSTRATE CONTACTING IN INTEGRATED CIRCUITS INVOLVING DEEP DIELECTRIC ISOLATION

Chakrapani G. Jambotkar, Hopewell Junction, and Shashi D. Malaviya, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1983, Ser. No. 561,507

Int. Cl.[4] H01L *21/265, 21/76*

U.S. Cl. 29—578 8 Claims



1. A method of making a low resistance access path to the substrate of an integrated circuit comprising transistors from the top surface of the integrated circuit body using a single mask comprising:

forming a thin region of one conductivity type on a major surface of a silicon substrate of the opposite conductivity type;

etching a shallow region to a depth below said region of one conductivity type in said major surface in an area designated to have said substrate contact;

by forming a silicon dioxide layer on said substrate forming a photoresist layer on said silicon dioxide layer and forming undercut mesa shapes in said photoresist through photolithographic techniques, etching exposed portions of said silicon dioxide layer and then etching in the newly exposed portion of said silicon substrate said shallow region to a depth below said thin region;

forming a region of the opposite conductivity type at a central portion of said shallow region;

heating the structure to form a buried collector region and a substrate reach-through region in said substrate;

forming an epitaxial layer on said major surface of said substrate;

forming isolation regions around said transistors and said substrate contact region through said epitaxial layer and filling said isolation region with isolation material;

simultaneously forming a base region and the substrate reach-through region for said integrated circuit in said epitaxial layer, wherein said substrate reach-through region in said substrate is directly under and in merger with said substrate reach-through region in said epitaxial layer;

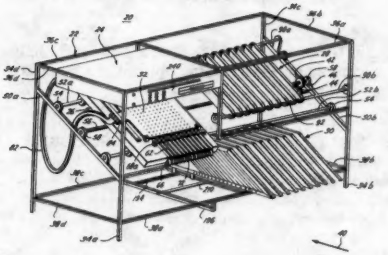
forming emitter and collector reach-through regions of said integrated circuit in said epitaxial layer; and

establishing electrical contacts to the thus formed integrated circuit,

4,584,764
AUTOMATED BURN-IN BOARD UNLOADER AND IC PACKAGE SORTER

Robert L. Gussman, Houston, Tex., assignor to Reliability Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 545,747, Oct. 26, 1983, abandoned. This application Mar. 8, 1985, Ser. No. 709,363
Int. Cl.[4] B23P *19/00*; H05K *3/00*
U.S. Cl. 29—705 **9 Claims**



1. Apparatus for unloading IC packages from sockets on a burn-in board, the burn-in board including for each socket mounted thereon at least one passageway extending through the burn-in board and the socket, comprising:

means for supporting the burn-in board;

means received within the passageways for pushing IC packages out of the sockets;

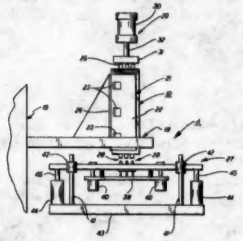
means for collecting IC packages displaced from sockets; and

means for selectively energizing said pushing means, whereby IC packages of a uniform grade are sorted from other IC packages on the burn-in board.

4,584,765
APPARATUS FOR ASSEMBLING TUBES IN A HEAT EXCHANGER

Kenneth Gray, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,096
Int. Cl.[4] B23P *15/26*
U.S. Cl. 29—727 **16 Claims**

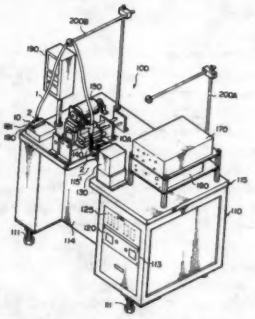


1. Apparatus for expanding tubes under tension into a plate-fin heat exchanger unit having a plurality of parallelly aligned hairpin tubes passing in rows through the fin plates and tube sheets of the unit and the open ends of the tubes being belled adjacent to one of the tube sheets that includes a clamping fixture having a pair of opposed stationary walls, coacting jaw pairs equal in number to the number of tube rows in the unit, a support means for movably suspending said jaw pairs between the walls, each of said jaw pairs having a first jaw member and a second jaw member arranged to open and close about the belled ends of the tubes contained in one of said tube rows, said movable support means including a first slide means secured to the corresponding first jaw member in each jaw pair, and a second slide means secured to the corresponding second jaw member in each jaw pair whereby the jaw pairs move in unison as they are opened and closed, biasing means for urging the jaw members into a normally opened position and closure means acting upon at least one of the first jaw members and at least one of the second jaw members to move the members from a normally opened position into a closed position about the belled ends of the tubes to restrain the bells of the tubes against axial movement, and expanding means for passing an expanding tool into each tube through the belled end thereof to expand the tube walls into contact against the fin plates and tube sheets of the unit while the bells are restrained in said clamping fixture.

4,584,766
APPARATUS FOR CONNECTION OF MULTICORE CABLE

Shingo Ogawa; Hitoshi Miyahira; Kensaku Sato, all of Tokyo; Yoshio Kawamura, Hitachi; Hirosi Kaida, Hitachi, and Yoshizi Itoh, Hitachi, all of Japan, assignors to Hirose Electric Co., Ltd. and Hitachi, Limited, both of Tokyo, Japan

Filed Oct. 14, 1983, Ser. No. 542,256
Claims priority, application Japan, Oct. 14, 1982, 57-180186; Oct. 14, 1982, 57-155612[U]
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—755 **3 Claims**



1. An apparatus for press-connecting both the first and second ends of a multi-core cable to contacts of corresponding line numbers of respective first and second connectors, comprising:

an operation plate;

a press-connecting drive device provided on said operation plate for press-connecting the first and second end of cores of the multi-core cable to contacts of respective first and second connectors;

a connector holding/moving device provided on said operation plate for holding one of the first or second connectors and moving the held connector relative to a press-connecting position;

a detector for detecting the change of electrical conditions of a selected one of the cores;

a coupling connector for connecting said detector to the first connector which is connected to the cores at the first end of said multi-core cable; and

a control circuit for controlling said connector holding-/moving device and said press-connecting drive device, such that said press-connecting drive device is actuated after every single pitch movement of the first connector by said connector holding/moving device to perform a single-pitch feed press-connecting operation for successively press-connecting the first ends of the cores to the contacts of said first connector in a random fashion, and such that said press-connecting drive device is actuated

after every movement of said second connector to select a corresponding line number on said second connector responsive to signals sent from said detector indicative of the line number or said first connector to which said selected core is connected, and second means for performing a line-selection feed press-connecting operation for successively press-connecting the second ends of each successively selected core to the line number contacts of said second connector corresponding to said line number contacts of said first connector of said selected core.

4,584,767

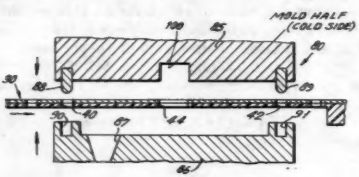
IN-MOLD PROCESS FOR FABRICATION OF MOLDED PLASTIC PRINTED CIRCUIT BOARDS

Vernon C. Gregory, 239 W. Myrna La., Tempe, Ariz. 85284

Filed Jul. 16, 1984, Ser. No. 631,209

Int. Cl.[4] H01K *3/22*

U.S. Cl. 29—848 **17 Claims**



1. An in-mold process for the fabrication of a molded plastic printed circuit board comprising the steps of forming at least one enclosed opening of given shape through a thin conductor foil; and thereafter inserting said thin conductor foil between the open first and second halves of a mold with a conductive first surface of said foil in abutting contact with the interior surface of said first half of said mold and aligning said enclosed opening in said foil with a related depression in said interior surface of said first mold half, closing said first and second mold halves and forming an enlarged sealed volume between the interior of said second mold half and the surface of said foil opposite said first surface; said enlarged volume communicating with said enclosed opening; injecting a molten plastic resin into said volume to fill said volume and said depression, and cooling said molten plastic resin, with said resin firmly adhering to said foil, thereby to define a molded printed circuit board having a body of said resin, and said conductor foil secured to the surface of said body of said resin.

4,584,768

METHOD OF MAKING HIGH CAPACITIVE MULTILAYER CONDUCTIVE BARS

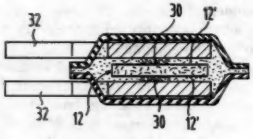
Giorgio Tosti, Segrate, Italy, assignor to Mecondor S.p.A., Milan, Italy

Filed Jul. 3, 1984, Ser. No. 627,349

Claims priority, application Italy, Jul. 6, 1983, 21954 A/83

Int. Cl.[4] H01R *43/00*

U.S. Cl. 29—872 **19 Claims**



1. A method for manufacturing high capacitive multilayer conductive bars with:

(a) at least two spaced conductive elements,

(b) at least one capacitive element positioned between the conductive elements,

(c) inner or outer dielectric elements positioned on at least one side of at least one conductive element,

(d) wherein the conductive, capacitive and dielectric elements are bonded to each other

wherein

(e) the mechanical connection between the conductive and dielectric elements is established by a non-conductive bonding material,

(f) the electrical connection between the conductive elements and the capacitive element is established by a soldering alloy material, and

(g) the bonding between the conductive, the capacitive, and the dielectric elements is performed in a single step.

4,584,769

EXTRACTOR FOR INCREMENT BORER

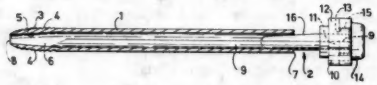
Ingvar Haglöf, Långsele, Sweden, assignor to Ingenjorsfirman I. Hagloff AB, Solleftea, Sweden

Filed Feb. 23, 1983, Ser. No. 468,990

Claims priority, application Sweden, Feb. 25, 1982, 8201186

Int. Cl.[4] G01N *1/04*

U.S. Cl. 30—130 **2 Claims**



1. An extractor in combination with an increment borer, the increment borer consisting of a tubular body having an internally cylindrical portion which, at its forward end, transforms to a convergent frusto-conical portion, the borer being provided on its outside with bore threads, said extractor comprising a semitubular blade and an end structure removably secured to the rearward end of the blade, said end structure comprising a sleeve with an axial through hole, a domed nut, and a locking pin each of said sleeve and said domed nut are provided with cooperating threads arranged so that said sleeve and said domed nut are axially movable and separable relative to one another, and said locking pin is elongated and essentially of conic shape and is inserted together with the rearward end of the blade into said axial hole in the sleeve, whereby said domed nut, upon being threaded on the sleeve, axially moves the locking pin, which is thereby pressed against the blade located between the locking pin and the wall of said axial hole in the sleeve to secure the rear end of the blade to said end structure.

4,584,770

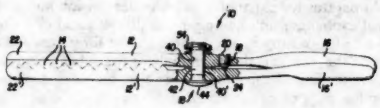
PINKING SHEARS WITH ADJUSTABLE TIP PRESSURE

Albert Sabol, Statesboro, Ga., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 546,525, Oct. 28, 1983, abandoned. This application Jul. 11, 1985, Ser. No. 754,206

Int. Cl.[4] B26B *13/00*

U.S. Cl. 30—267 **12 Claims**



5. A pair of shears, comprising:

a pair of blades, each blade having cutting surfaces, a tip on one end and a handle on the other end;

pivot means for pivotably mounting the blades to one an-

other at a point intermediate the tips and handles, said pivot means having resilient means for maintaining pressure between the blades, said pivot means comprising a pivot bolt having oversized threads, a pair of spring washers on the pivot bolt, and a nut having a radial slot and socket means in the outer periphery thereof for receiving a wrench whereby the nut is adapted to expand as it is threaded onto the oversized threads of the bolt; and

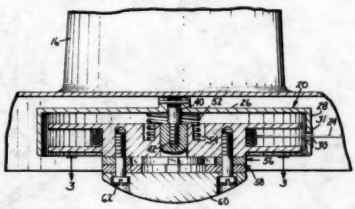
means mounted in one of said blades between the cutting blades at the tips of the pair of blades, said pressure adjusting means comprising a ball and a housing means having a bore with a conical bottom for retaining the ball therein, the ball of said pressure adjusting means bearing against the other of said pair of blades.

4,584,771

LINE METERING APPARATUS

Henry B. Tillotson, Minneapolis, Minn., assignor to The Toro Company, Minneapolis, Minn.

Filed Aug. 13, 1976, Ser. No. 714,013
Int. Cl.[4] A01D *50/00*
U.S. Cl. 30—276 **4 Claims**



1. Apparatus for cutting vegetation and the like by means of a flexible cutting filament rotatably operable within a cutting plane, said apparatus comprising a rotatable head structure operable about an axis generally perpendicular to said cutting plane, means for rotating said head structure, a spool rotatable with said head structure and also rotatably shiftable in respect thereto, said spool and head structure also being relatively axially shiftable, said spool being arranged to carry a supply of filament and emit a predetermined increment thereof upon relative rotation between said spool and said head structure, and means for controlling said relative rotation by the relative axial shifting of said spool and head structure, said control means comprising two sets of interengageable detents, one set comprising two axially spaced rows of detents and the other set comprising a row of detents selectively engageable with either of said first named rows, one set of detents being provided upon a pair of independently fabricated members cooperatively associated with said spool for rotation therewith.

4,584,772

HAND-HELD PLANING TOOL WITH A ROTARY CUTTER

Otto Bergler, Mühlacker-Lomersheim, Fed. Rep. of Germany, assignor to Black & Decker Overseas AG, Vaduz, Liechtenstein

Filed May 11, 1984, Ser. No. 609,222
Claims priority, application Fed. Rep. of Germany, May 24, 1983, 3318844; Dec. 13, 1983, 3344962
Int. Cl.[4] B27C *1/10*
U.S. Cl. 30—475 **17 Claims**

1. A hand-held planing tool comprising:

a housing forming a generally cylindrical planer chamber therein;

a vertically adjustable feed plate mounted on said housing at a forward side of said chamber and including a rear edge;

vertical adjusting means for vertically adjusting said feed plate relative to said housing;

a support member including a discharge plate mounted on said housing at a rear side of said chamber and including a front edge,

said front and rear edges defining a downward opening of said chamber;

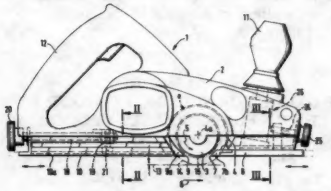
a planer head mounted on said housing for rotation within said chamber about an axis extending transversely of a fore-aft axis of said housing, said axis of rotation being fixed in location relative to a lower guide surface defined by said discharge plate;

an electric motor mounted on said housing and being operably connected to said planer head for rotating the latter;

said chamber being sized to selectively receive one of:

a planer head having first cutting edge means for cutting a workpiece along a transverse line which is substantially parallel to said guide surface, and

a planer head having second cutting edge means for cutting profiles along a transverse line which is non-parallel to said guide surface, said second cutting edge means having a maximum outer diameter which is greater than a diameter of said first cutting edge means;



said guide surface being disposed substantially tangentially relative to a diameter of said first cutting edge means;

means for adjusting said feed plate in said fore-aft direction relative to said housing independently of said vertical adjusting means to adjust said rear edge relative to the cutting edge means of the planer head, and

means for adjusting said discharge plate in said fore-aft direction relative to said housing to adjust said front edge relative to the cutting edge of the planer head,

said rear edge of said feed plate having a contour corresponding to the contour of the cutting edge means of the planer head, said feed plate including a main part securable to said housing and an exchangeable part carrying said rear end of said main part, said exchangeable part carrying said rear edge and being exchangeable so that said rear edge can be adapted to the contours of the first and second cutting edge means.

4,584,773

LINEAR MEASURING SYSTEM

Heinz Rieder, St. Pantaleon, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF Elektronik Gesellschaft M.B.H., Tarsdorf, Austria

Filed Jul. 11, 1985, Ser. No. 754,028
Claims priority, application Austria, Jul. 18, 1984, 2317/84
Int. Cl.[4] G01B *11/04*
U.S. Cl. 33—125 C **5 Claims**

1. In a linear measuring system comprising

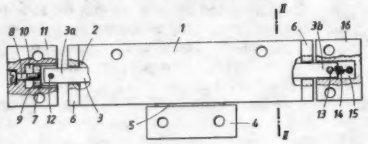
an elongate housing tube,

a metal strip extending in said housing tube along the same and provided with a longitudinal scale and having mutually opposite side edges extending in said housing tube,

a scanning unit extending in and movable along said housing tube to scan said scale, and

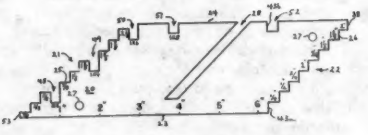
strip-mounting means for mounting said metal strip at both ends thereof, said strip-mounting means comprising a spring connected to one end of said metal strip and ten-

sioning said strip, and an adjusting mechanism for adjusting the initial tension of said spring,
the improvement residing in that
said strip extends in said housing tube substantially without a longitudinal restraint,
said side edges are entirely clear of said housing tube,



said strip-mounting means comprise two brackets, which extend outside said housing tube and are disconnected from said housing tube and are connected to said metal strip at respective ends thereof, and
said scanning unit comprises guiding means in sliding contact with both said side edges of said metal strip to prevent a lateral wandering of said metal strip relative to said scanning unit.

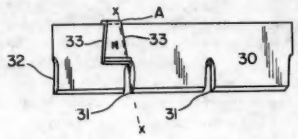
4,584,774
STEP GAUGE FOR SETTING UP WOOD WORKING TOOLS FOR SPECIALTY PROCESSING
Glennie W. Link, 14329 - 12th SW., Seattle, Wash. 98166
Filed Nov. 26, 1984, Ser. No. 674,913
Int. Cl.[4] G01B *3/30*
U.S. Cl. 33—168 R **3 Claims**



1. An improved step gauge for setting the depth or width of blades or bits of wood working tools, the gauge having a planar surface with at least one reference edge and another edge at right angles thereto, a series of measurement steps configured along said another edge with each of the steps in the series of measurement steps having at least one surface which is located a known fixed distance from the reference edge, the known fixed distance of successive steps progressively increasing from the reference edge in regular increments, the improvement comprising:
specialty notches on said gauge, said specialty notches including a sequence of notches which are interspersed among said measurement steps, each of said notches in said sequence of notches having at least one surface located a fixed distance from said another reference edge which is a fraction of standard lumber dimensions to set up the specialty processing of standard lumber pieces.

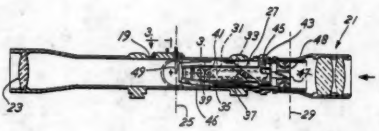
4,584,775
ROOFERS SQUARE AND CAP CUTTER
Keith H. Boman, 844 S. Eight Mile, Midland, Mich. 48640
Continuation-in-part of Ser. No. 481,302, Apr. 1, 1983, abandoned. This application Oct. 15, 1984, Ser. No. 661,045
Int. Cl.[4] G01B *3/30*
U.S. Cl. 33—188 **2 Claims**

1. A cap cutter and alignment tool comprising a single flat member of elongated trapezoidal shape, having on the upper edge of its back planar surface, a downwardly directed lip such that a rail is formed on the upper edge of the back planar surface to adapt to and engage the edge of a shingle; having on the lower edge of its front planar surface, an upwardly directed lip, which lip is oppositely directed from the lip formed on the back planar surface, to adapt to and engage the edge of a



shingle, said cap cutter having a protuberance extending from the middle of its lower one-half back planar surface, the protuberance to serve as a fulcrum point for the cap cutter.

4,584,776
TELESCOPIC GUN SIGHT
Daniel R. Shepherd, R.R. #1, P.O. Box 23, Waterloo, Nebr. 68069
Continuation of Ser. No. 206,668, Nov. 13, 1980, Pat. No. 4,403,421. This application Sep. 12, 1983, Ser. No. 531,756
Int. Cl.[4] F41G *1/38, 1/42*
U.S. Cl. 33—246 **6 Claims**



1. A telescopic sight for use with a firearm, comprising:
objective lens means for presenting an object onto an image plane;
inverting tube means positioned relative to said image plane for inverting the object image appearing in said image plane;
ocular lens means for presenting the inverted object image for viewing;
a primary reticule positioned at and in a fixed relationship with one end of said inverting tube means, said one end being the end disposed more distally from said image plane;
adjustment means manually actuable for positioning the other end of said inverting tube means relative to said one end, for adjusting said primary reticule relative to the image formed in said image plane, said adjustment means including
(i) a platform rotatably mounted adjacent said other end of said inverting tube means, said platform having a rotational axis about which said platform rotates; and
(ii) an arm carried by said platform at a position offset from said rotational axis, said arm being movably mounted with respect to said platform and engaging said other end of said inverting tube means for movement of said inverting tube means:
(a) by rotation of said platform, or
(b) by movement of said arm relative to said platform.

4,584,777
BOW SIGHT
Charles A. Saunders, 8380 - 36th Ave., Columbus, Nebr. 68601
Filed Feb. 19, 1985, Ser. No. 702,884
Int. Cl.[4] F41G *1/00*
U.S. Cl. 33—265 **12 Claims**

1. An archery sight apparatus for attachment to a bow for facilitating proper vertical and lateral alignment of a bow shot

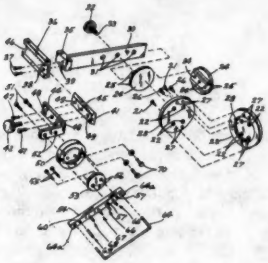
with respect to targets at different distances, said sight apparatus comprising:

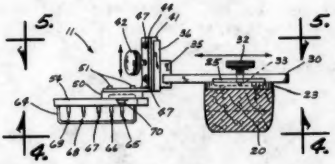
a housing adapted to be attached to a bow;

an elongated member operably attached to said housing;

a first sight reference point means defining a first sight point, a substantially horizontal axis extending through said first sight point, said first sight reference point means being operably attached to said elongated member for alignment in the line of sight between an archer and a target disposed at a first distance from the archer for causing an arrow shot from the bow to strike the target when released under proper alignment conditions;

a second sight reference point means attached to another portion of said elongated member for alignment in the line of sight between an archer and a target disposed at a second distance from the archer for causing an arrow shot from the bow to strike the target disposed at the second





distance when the arrow is released under proper alignment conditions;

means for selectively pivoting said elongated member about the substantially horizontal axis of the first sight point for adjusting the distance that the second sight reference point means will be disposed vertically from said first sight reference point means;

means for selectively locking said elongated member in any one of a number of desired pivotal positions;

vertical adjustment means operably connected to said pivoting means and to said housing for adjusting the vertical position of said horizontal axis of said first sight reference point means with respect to said housing; and

lateral adjustment means operably attached to said housing and to said pivoting means for adjusting the lateral position of said elongated member and thereby said first sight reference point means with respect to said housing.

4,584,778

ANGLE CHANGE DETECTOR

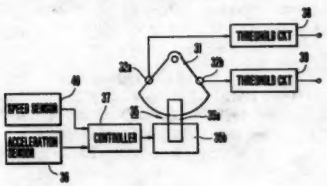
Seiichi Komasaku, Yokohama; Hiroshi Iiyama, Yokosuka; Noboru Watanabe, Tokyo, and Osamu Tanaka, Kawasaki, all of Japan, assignors to Jeco Co., Ltd., Kanagawa, Japan

Division of Ser. No. 502,087, Jun. 8, 1983. This application Aug. 22, 1985, Ser. No. 768,240

Claims priority, application Japan, Jun. 9, 1982, 57-85633; Jun. 28, 1982, 57-97171; Aug. 6, 1982, 57-119642; Aug. 26, 1982, 57-128864

Int. Cl.⁴ G01C *9/06, 9/12*

U.S. Cl. 33—366 **6 Claims**



1. An angle change detector comprising a pendulum of electroconductive, non-magnetic material, a frame supporting the pendulum for swinging movement relative thereto, means for applying magnetic flux to the pendulum, means for supporting the means for applying the magnetic flux on the frame, said means for applying the magnetic flux comprising first and second magnetic poles of opposite polarity disposed in a magnetic path and defining a gap therebetween, said pendulum being positioned to swing in said gap across the portion of said magnetic path extending between said poles to effect electromagnetic damping of said swinging movement and means for detecting relative swinging movement between the frame and the pendulum, said detecting means comprising first and second photosensors disposed adjacent opposite edges of said pendulum and first and second adjustable threshold circuits connected to the respective first and second photosensors to produce output signals when a signal from the associated photosensor exceeds a predetermined adjustable threshold level.

4,584,779

TRIMMING SQUARE SET

Hiroto Wakamatsu, 12-16, Inogashira 1-chome, Mitaka-shi, Tokyo 181, Japan

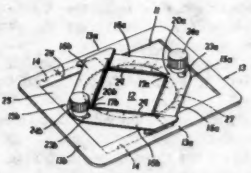
PCT No. PCT/JP84/00502, § 371 Date Jun. 11, 1985, § 102(e) Date Jun. 11, 1985, PCT Pub. No. WO85/01918, PCT Pub. Date May 9, 1985

PCT Filed Oct. 20, 1984, Ser. No. 744,697

Claims priority, application Japan, Oct. 26, 1983, 58-199262; Jun. 28, 1984, 59-134006

Int. Cl.⁴ B43L *7/06*

U.S. Cl. 33—464 **6 Claims**



1. A trimming square set comprising in combination:

a base plate having a circular opening therein;

a first square member having inner edges set at right angles to each other and pivotally supported on the base plate by

a pin member located at a position proximate to the peripheral edge of the circular opening of said base plate, at a point proximate to an intersecting point of said inner edges;

a slide plate being slidingly movable on said base plate in a direction parallel with an imaginary line passing through the centers of said pin member and circular opening and provided with a semi-circular notch congruently with the peripheral edge of said circular opening of said base plate; and

a second square member having inner edges set at right angles to each other and pivotally supported on said slide plate by a second pin member located on said imaginary line and in a position proximate to the peripheral edge of said semi-circular notch, at a point proximal to the intersecting point of the inner edges thereof.

4,584,780

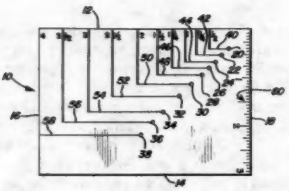
LAYOUT TEMPLATE FOR ELECTRICAL PANEL

John R. Pressey, 4600 Spring St., Neptune, N.J. 07753

Filed Oct. 23, 1984, Ser. No. 664,404

Int. Cl.[4] G01B *3/02*

U.S. Cl. 33—563 **7 Claims**



1. A template for laying out electrical conduit positions on an electrical panel and the like comprising a sheet formed with a pair of orthogonally disposed straight edges, a plurality of openings formed through the sheet at different distances from said edges respectively for marking the centers of different size conduits, the spacing of each opening from the respective edges being related to a particular conduit size so as to space the center of the conduit a suitable distance from lines along which the respective edges of the sheet are placed, and indicia on one surface of the sheet identifying the size of conduits designated by the respective openings, wherein each opening is spaced from each of said edges by an amount corresponding to half the inside dimension of the conduit it designates plus the conduit wall thickness, and wherein the template further includes a marking on said surface of the sheet along one of said edges for each of said openings, each marking being spaced from the respective opening by an amount corresponding to half of the inside dimension of the conduit which the opening designates plus the wall thickness of the conduit.

4,584,781

LOW FRICTION VACUUM VALVE AND DRYING APPARATUS

Martin C. Parkinson, 6 N. Delaware Dr., Nyack, N.Y. 10960, and Gary B. Wiley, Sinking Spring, Pa., assignors to Martin Parkinson, Nyack, N.Y.

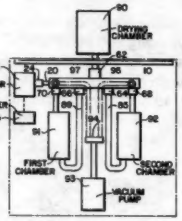
Filed Apr. 29, 1985, Ser. No. 728,525

Int. Cl.[4] F26B *13/30, 21/06;* **E03B** *3/00*

U.S. Cl. 34—92 **11 Claims**

11. A low friction vacuum valve, comprising:

a first elastomeric, tubular outer member being open at both ends and having a pair of openings along its length communicating with a pair of additional elastomeric, tubular members at a spaced distance from each other, integral with and at an angle to said first member, and a rigid, tubular inner members being closed at both ends, slidably and rotatably mounted within said first member, having a pair of openings along its length for communicating with said pair of additional tubular members, said inner member having a pair of circumferentially raised portions for each of said openings in said inner member, said circumferentially raised portions being greater in outer diameter than the outer diameter of said inner member, each of said openings in said inner member being spaced in between one of said pairs of circumferential portions, spaced in between and connected to each of said pairs of circumferential portions is a longitudinally raised portion of equal outer diameter to the circumferential portions, said longi-



tudinal portions each having a surface area greater than the area of each of said openings in said inner member and greater in surface area than the area of each of said opening is said additional tubular members, the diameter of said circumferential portions and longitudinal portions being larger than the internal diameter of said first member, so that when an additional tubular member is connected to a source of vacuum said inner member cooperates to form a vacuum seal with said first member, and also reduces frictional force when turning said inner member within said first member.

4,584,782

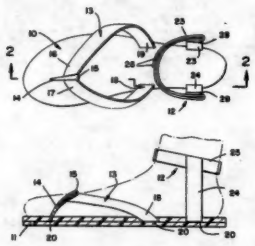
SPORT SANDAL CONSTRUCTION

Mark Thatcher, Box 968, Flagstaff, Ariz. 86002

Filed Dec. 12, 1983, Ser. No. 560,569

Int. Cl.[4] A43B *3/12*

U.S. Cl. 36—11.5 **3 Claims**



1. A sport sandal of the thong type with full retention capabilities comprising:

a platform sole means having a general peripheral configuration corresponding to that of a human foot and having a toe end and a heel end;

a frontal "Y" shaped strap assembly having a web anchored centrally in the toe end of said platform sole means, said web diverging into two flat footstraps above said platform sole means with one of said footstraps disposed along the longitudinal side of said platform sole means and the other footstrap disposed along the opposite side of said platform sole means, each footstrap extending to a separate anchor point adjacent to the heel end thereof on its side of said platform sole means with each of said straps fixedly se-

cured to said platform sole means at its respective anchor point,

an ankle harness having two upright support straps, one of said upright support straps having an end fixedly anchored in said platform sole means adjacent to its heel end along one side thereof and the other one of said upright support straps having an end fixedly anchored in said platform sole means adjacent to its heel end along the opposite side thereof, each of said upright support straps having a height above the sole means sufficient to place the top end thereof proximate to the ankle bone of a wearer when the sandal is worn, and a horizontal strap with two free ends forming a semi-circular loop between the top ends of said upright support straps forward of the heel end of said platform sole means with said semi-circular loop joined with the top ends of said support straps and means on said free ends of said horizontal strap for connecting said free ends of said horizontal strap around the wearer's ankle when said sandal is worn.

4,584,783

SHOE TONGUE HOLDER ASSEMBLY

Thomas M. Dobbin, Denver, Colo., assignor to Kaepa, Inc., San Antonio, Tex.

Continuation of Ser. No. 376,425, May 10, 1982, Pat. No. 4,442,613. This application Apr. 16, 1984, Ser. No. 600,352

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.[4] A43B *11/00, 23/26*

U.S. Cl. 36—50 **5 Claims**

1. A shoe comprising:

(a) a tongue,

(b) a vamp including oppositely disposed portions overlying the tongue,

(c) securing means interconnecting the vamp portions for selectively adjusting the fit of said portions over and on the tongue for the comfort of the wearer,

(d) fastener means operatively interconnecting the tongue and vamp for holding the tongue in place during fitting and wearing of the shoe,

(e) the tongue including opposed side margins underlying the portions of the vamp, one of said margins being selectively operatively interconnected to its overlying vamp portion by the fastener means, and the other of said margins being free of operative interconnection to its overlying vamp portion.

4,584,784

METHOD AND DEVICE FOR MAINTAINING TOOLS AT A LEVEL

Tjako A. Wolters, No. 4, Sanatoriumlaan, Zeist; Cornelis J. Ravesteyn, 37, Herenweg, Wilnis, and Thomas J. Ruyter, No. 3, Wulpenhof, Schagen, all of Netherlands

Continuation of Ser. No. 79,303, Sep. 26, 1979, abandoned. This application Nov. 10, 1981, Ser. No. 320,063

Claims priority, application European Pat. Off., Sep. 29, 1978, 78200217

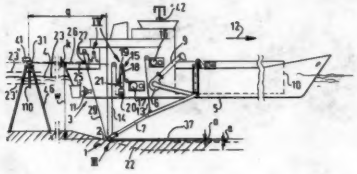
Int. Cl.[3] E02F *3/88*

U.S. Cl. 37—58 **2 Claims**

1. The method of controlling an underwater tool in a body of water which is affected by waves and tides, so as to provide a specified contour of subaqueous soil, which comprises the steps of:

(a) establishing a fixed reference point of known level in horizontally spaced relation to the hull;

(b) positioning said tool in working engagement position with the subaqueous soil below the hull at a working position level which is fixed with respect to said fixed reference point while said hull is at one end of said path, tensioning from said hull a cable connected to said tool while maintaining said tool suspended from said hull at



said working position level to compensate for wave motion acting vertically on the hull whereby said cable tends to remain relatively stationary in the vertical sense with respect to said fixed reference point, and establishing a tool level reference point on said cable at a known distance above said tool; and

(c) controlling said tool, while said hull is travelled toward the opposite end of said path, to form said specified contour by directly monitoring said tool level reference point from said fixed reference point.

4,584,785

IDENTIFICATION MEANS FOR SLINGS

Hans-Otto von Danwitz, Kaarst, Fed. Rep. of Germany, assignor to Spanset Inter AG, Basel, Switzerland

Filed Nov. 30, 1983, Ser. No. 556,271

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1982, 8234186[U]

Int. Cl.[4] G09F *3/00*

U.S. Cl. 40—316 **3 Claims**

1. In a round sling for lifting and transporting purposes, said round sling having a protective tubing of a woven textile fabric surrounding a skein of threads for carrying the load, the improvement wherein:

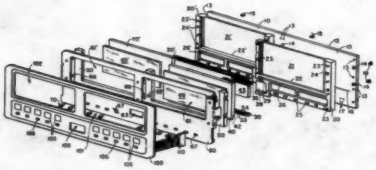
said tubing is provided with symbols which project in a raised manner beyond the exterior of the tubing surface and which are formed by warp threads of the tubing fabric, said warp threads being spin-dyed plastic threads which extend in the longitudinal direction of the tubing and which have a color which contrasts with the tubing color.

4,584,786

INFORMATION PANEL ASSEMBLY

Thomas Georgopulos, Clearwater, Fla., assignor to GTE Automatic Electric Inc., Northlake, Ill.

Filed Dec. 23, 1982, Ser. No. 452,691
Int. Cl.[4] G09F 9/00
U.S. Cl. 40—448 12 Claims



1. An information panel assembly comprising:

a circuit member including a front and a rear face, a first and a second plurality of apertures forming openings between said front and rear faces and at least one row of spaced contacts, said contacts connected to a source of control signals, and said circuit member further including a plurality of light emitting diode circuit connection areas, said light emitting diode circuit connection areas connected to said source of control signals;

at least one mounting member having a display accepting area, a plurality of spaced openings and a plurality of apertures and alignment pins projecting from said mounting member, said mounting member arranged to mount to said circuit member front face with each of said mounting member alignment pins accepted by a different one of said circuit member first plurality of apertures, and each of said circuit member second plurality of apertures aligned with a corresponding mounting member aperture, said mounting member further including at least one slot, opening to said circuit member row of electrical contacts;

a connector having a plurality of spaced terminals, said connector mounted within said mounting member slot with one end of each terminal engaging a respective one of said circuit member electrical contacts;

a display device including a row of contacts, said display device mounted to said mounting member display accepting area and said display device contacts engaging a respective one of an opposite end of said connector terminals, connecting said display device to said source of control signals; and

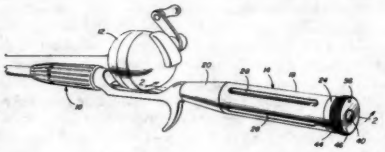
a cover member including a plurality of spaced openings, at least one window and a plurality of rear projecting members each of said projecting members including a threaded bore, said cover member mounted over said mounting member rendering said display device visible through said window, and said cover member openings in alignment with said mounting member openings, each of said aligned cover member and mounting member openings arranged to accept a light emitting diode therein, connecting each light emitting diode to a respective one of said circuit members circuit connection area and to said source of control signals, and each rear projecting member inserted into a respective and associated mounting member and circuit member second aperture, with each projecting member bore arranged to accept a threaded fastener therein from said circuit member rear face, locking said cover member to said circuit member.

4,584,787

HEATED HANDLE STRUCTURE

Robert E. Aho, R.D. 2, Box 74, Brockway, Pa. 15824

Filed Apr. 17, 1985, Ser. No. 724,302
Int. Cl.[4] A01K 87/00; A61F 7/06
U.S. Cl. 43—23 17 Claims



1. A hand warmer structure comprising an outer cylindrical container having a closed front end, an open back end, and vent means in the circumferential wall thereof, an inner cylindrical container for coaxial conforming receipt in the outer container from the back end of the outer container the inner container an a closed back end having an open front end for inserting a fuel element into the inner container, and having vent means in the circumferential wall thereof registrable with the vent means in the outer container upon relative rotary adjustment of the containers about their common axis, an end cap for securing on the open end of the outer container, a shaft extending from the back end of the inner container through the end cap and terminating in an adjustment knob for rotating the inner container in the outer container to adjust the relative alignment between the respective vent means between a fully open position for maximum air admission to the fuel element, and a fully closed position for excluding air from the fuel element, and retention means for retaining the knob and the inner container in selected angular position relative to the outer container.

12. A fishing rod having a handle structure comprising an outer cylindrical member having an open back end and vent means in the circumferential wall thereof, an inner cylindrical container for coaxial conforming receipt in the outer cylindrical member, the inner container having an open front end for insertion of a fuel element into the inner container and a closed backend and having vent means in the circumferential wall thereof registrable with the vent means of the outer cylindrical member upon relative rotary adjustment of the inner container about its axis, an end cap for securing on the open end of the outer member, a shaft extending from the back end of the inner container through the end cap and terminating in an adjustment knob for rotating the inner container in the outer member to adjust the relative alignment between the respective vent means between a fully open position for maximum air admission to the fuel element, and a fully closed position for excluding air from the fuel element, and retention means for retaining the knob and the inner container in selected angular position relative to the outer member.

4,584,788

POSITIVE TRIGGER TRAP

Charles Powell, 2100 Washington St., Vicksburg, Miss. 39180

Filed Apr. 13, 1984, Ser. No. 600,017
Int. Cl.[4] A01M 23/26
U.S. Cl. 43—88 21 Claims

1. In a trap:

(a) a housing having a front and back ends;

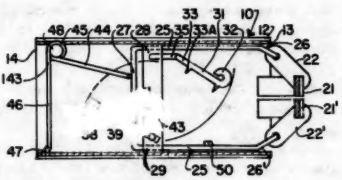
(b) a jaw means pivotally attached to said housing near the front end;

(c) an elongated connecting means connected to said jaw means and substantially recessed in said housing;

(d) means for tensioning said connecting means having a force vector directed toward the front of said housing;

(e) releasing means for releasably engaging said connecting means; and

(f) recessed trigger means contained within said housing releasably engaged with said releasing means and positioned within said housing in a manner that upon pulling



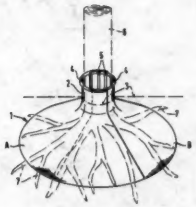
said trigger means toward the front end of said housing, the trigger means disengages from said releasing means which disengages from the connecting means where the tension thereon causes said jaws to pivot.

4,584,789

APPARATUS FOR ENHANCING THE DEVELOPMENT OF MICROORGANISMS NEEDED TO PROMOTE THE GROWTH AND DEVELOPMENT OF VEGETATION

Gilbert Jean, and Maurice Jean, both of 100, rue des Moulins, 26000 Valence, France

Filed Dec. 20, 1983, Ser. No. 563,529
Claims priority, application France, Dec. 20, 1982, 82 21605
Int. Cl.[4] A01G *17/00*
U.S. Cl. 47—25 **14 Claims**



1. Apparatus for enhancing the development of microorganisms necessary for promoting the growth of plants, trees and other vegetation having roots, said apparatus adapted to be at least partially buried under the surface of ground in which said vegetation is growing, said apparatus comprising:

(a) a frustoconical skirt adapted to be buried underground and adapted to cap said roots, said skirt having inner and outer surfaces, a relatively wide lower edge, and a relatively narrow upper portion;

(b) a substantially cylindrical collar connected to said upper skirt portion, said collar having inner and outer surfaces and being adapted to extend above the surface of said ground and surround the trunk of said plant once said skirt is buried under ground; and

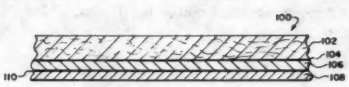
(c) a plurality of drains, each of said drains comprising a unitary and continuous channel extending along the inner surface of both said collar and said skirt said drains acting to transport water running down said trunk along said channels to said skirt and depositing water adjacent to said plant roots.

4,584,790

SEED MAT AND METHOD AND APPARATUS FOR MANUFACTURING IT

Thomas P. Gaughen, Rte. 1, Cedar Bluffs, Nebr. 68015

Filed Nov. 6, 1984, Ser. No. 668,890
Int. Cl.[4] A01C *1/04*; B32B *31/00*
U.S. Cl. 47—56 **12 Claims**



1. Apparatus for forming a seed mat for seeds of a predetermined color comprising:

first conveyor means having a predetermined width and length for moving material along its length;

a plurality of stations spaced-apart along the length of the conveyor means;

distribution bin means for distributing mulch on the conveyor;

said distribution bin means being located at a first of said stations and including a second conveyor means;

the side walls of said distribution bin forming an enclosure, an opening and a roller;

said second conveyor means being positioned between said first conveyor and said side walls forming an enclosure with the direction of motion of its top run being toward the opening to move straw from the bin onto the first conveyor means;

the roller being adjustably held against said first conveyor means near said opening to compact said material;

first glue spraying means at a second station for spraying glue at an air pressure of between 10 and 25 pounds per square inch in a layer on top of said mulch as it moves down said conveyor from said first station;

fertilizer distributor means at the second station for applying fertilizer to said glue and mulch;

first paper applicator means positioned adjacent to said conveyor at the second station for applying first paper on top of said mulch, glue and fertilizer;

said first paper being less than twenty pounds in weight, smooth surfaced, biodegradable and of a color contrasting to the color of said seeds;

second glue spraying means for spraying a light application of glue on top of said first paper;

seed distribution means for evenly distributing seed on top of said first paper;

second paper applicator means for applying second paper to said mat on top of said seed;

said second paper being less than twenty pounds in weight, smooth surfaced, biodegradable and of a color contrasting to the color of said seeds;

heat tunnel means for drying said mat; and

means for cutting said mat into predetermined sections.

4,584,791

SOILESS AGRICULTURAL SYSTEM AND COMPONENTS THEREFORE

Rodney A. Wolf, Amherst Junction, Wis., assignor to Brandon Woods Associates, Chicago, Ill.

Filed Aug. 29, 1984, Ser. No. 646,373
Int. Cl.[4] B01J *3/00*
U.S. Cl. 47—62 **11 Claims**

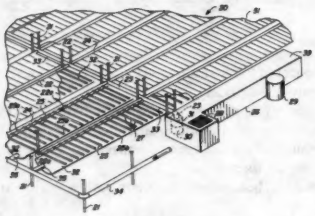
1. A hydroponic system comprising:

a plurality of spaced-apart suspending poles set in a base material to support and define a field;

a plurality of substantially parallel paired bars perpendicularly mounted on brackets vertically mounted between said bars and in parallel relationship to each other to form a substantially horizontal plane;

nutrient solution conduit tubes located above and supported by said bars, said tubes communicating with a circulating solution source and terminating in spray tubes having an orifice for release of said solution, said spray tubes supported on said brackets;

a plant support tray suspended on the spray tubes and interruptedly channelled to expose spray tube orifices located along the tube length, said tray having a floor positioned to receive solution emitted by the spray tubes, said tray floor carrying a plurality of openings adapted to carry a



plurality of liquid-porous root sacks extending therebelow;

a flume channel located below said tray and substantially coextensive in length thereto positioned to receive solution released from said root sacks and carry the solution to a central flume whereby the solution is returned to the circulating source; and

a central solution reservoir to receive solution draining from the central flume, said reservoir having a circulating solution communicating with said spray tubes.

4,584,792

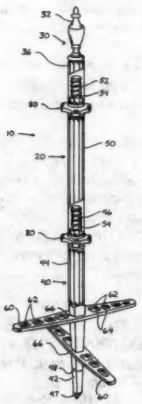
PLANT SUPPORT

Leland E. Etzel, 916 Garfield Dr., Carpentersville, Ill. 60110

Filed Jun. 25, 1984, Ser. No. 624,534

Int. Cl.[4] A01G 9/12

U.S. Cl. 47—70 **20 Claims**



1. A removable plant support suitable for supporting a plant by securing said plant thereto, said plant support having an increasable length including a multi-sectioned pole having at least two interconnected pieces, at least one base section included in said two interconnected pieces, a plant tie support, and at least one base cross member, wherein:

a. said pieces of said multi-sectioned pole include a decorative top section for defining the top of said plant support and a base section having a lower end to be inserted into the ground oppositely disposed from said decorative top, said lower end tapering from its top section;

b. said plant tie holder mounted between each of said sections;

c. said lower end bearing at least one elongated, base cross member slideably mounted on said base section for support in order to provide below ground support for said plant;

d. said at least one elongated base cross member and at least a portion of said lower end bearing being beneath the soil; and

e. said at least one base cross member including a plurality of root receiver apertures; said root receiver apertures serving to receive roots of said plant in order to strengthen support for said plant—whereby, when said base section is removed, said at least one cross member will remain beneath the soil to fixedly hold the roots of said plant.

4,584,793

DOOR GLASS WEATHER STRIP IN MOTOR VEHICLES

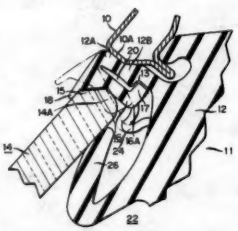
Hachiro Okada, and Kenzi Ono, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 29, 1985, Ser. No. 717,687

Claims priority, application Japan, Apr. 3, 1984, 59-48958[U]

Int. Cl.[4] E06B 7/16

U.S. Cl. 49—488 **14 Claims**



1. A door glass weather strip in a motor vehicle comprising a main body of door glass weather strip held by a door frame, a top end seal portion continuously, integrally formed on said main body of door glass weather strip to be clamped between the upper end edge of a door glass and the door frame when said door glass is fully closed and an outer lip formed on said top end seal portion in a manner to be continuously extending to the outside of the vehicle and to come into contact with the outer surface of the upper end edge of said door glass when said door glass is fully closed, wherein:

said top end seal portion and said outer lip are formed to provide a member being of a generally L-shape in cross section, which can integrally rock about the outer end portion of said main body of door glass weather strip on the outer side of the vehicle in a direction of the thickness of said door glass; and

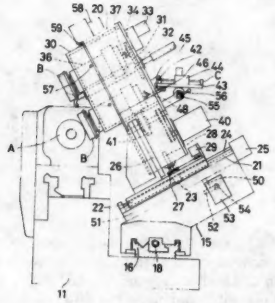
a hook-shaped block is formed at the end portion of said top end seal portion on the side of a compartment, to be engaged with a recess formed in said main body of door glass weather strip in a manner to control a displacement of said top end seal portion outwardly in the direction of the thickness of said door glass.

4,584,794

GRINDER

Nobuyuki Hirohata, 180-8, Arimoto, Wakayama-shi, Wakayama-ken, Japan

Filed May 4, 1984, Ser. No. 606,962
Claims priority, application Japan, Jun. 2, 1983, 58-84719[U]
Int. Cl.[4] B24B 5/04
U.S. Cl. 51—56 R 1 Claim



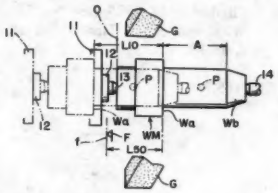
1. An apparatus for grinding a workpiece, comprising:
means for supporting opposite ends of the workpiece to be ground;
means, mounted on the supporting means, for rotating the workpiece around a central longitudinal axis therethrough;
a carriage being disposed between the supporting means and being shiftable parallel to the central longitudinal axis through the workpiece;
a rotor means, provided on the carriage, for carrying a plurality of grindstones thereon;
each of said plurality of grindstones being different from each other in grain size;
each of said plurality of grindstones being adaptable to operations ranging from rough grinding to mirror-like finishing;
a bearing means, arranged on the carriage, for operatively connecting the rotor means with the carriage;
a plurality of shaft means, extending between the rotor means and the bearing means along a line perpendicular to the central longitudinal axis of the workpiece, for rotating the plurality of grindstones;
first rail means, arranged on the carriage along a line parallel to but spaced from the line along which the plurality of shaft means are extending, for guiding the bearing means back and forth therealong;
first motor means, arranged on the carriage, for sliding the bearing means back and forth along the first rail means;
second rail means, arranged on the carriage perpendicular to the first rail means, for guiding the bearing means up and down therealong;
second motor means, arranged on the carriage, for sliding the bearing means up and down along the second rail means;
means, arranged on the bearing means, for pressing against one end of a selected one of the plurality of shaft means so that a selected one of the plurality of grindstones on an opposite end of the selected one of the plurality of shaft means comes into contact with the workpiece;
wherein said pressing means includes
a seat plate having a top surface and a bottom surface;
a weight slidable along the top surface of the seat plate;
a cam rollable along the bottom surface of the seat plate;
a lever means, connected to the cam, for turning the cam into and out of engagement with the seat plate; and
a pin means, connected at one end to the seat plate, for engaging at an opposite end with the one end of the selected one of the plurality of shaft means;
whereby movement of the lever means causes the cam to move out of engagement with the seat plate, allowing the seat plate to move and the weight to slide on the seat plate so as to create a force through the pin means pressing the selected one of the plurality of grindstones into contact with the workpiece.

4,584,795

NUMERICAL CONTROL GRINDING MACHINE FOR GRINDING A TAPER PORTION OF A WORKPIECE

Hitoshi Akabane, Anjo, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 20, 1985, Ser. No. 713,819
Claims priority, application Japan, Mar. 22, 1984, 59-55486
Int. Cl.[4] B24B 49/02
U.S. Cl. 51—165.71 5 Claims



1. A numerical control grinding machine, comprising:
a bed;
a traverse table movably mounted on said bed;
a swivel table mounted on said traverse table and pivotable about a pivot secured to said traverse table;
workpiece support means mounted on said swivel table for supporting a workpiece to be rotatable about an axis which extends in the moving direction of said traverse table;
a grinding wheel mounted on said bed and movable toward and away from said workpiece;
a traverse feed device for moving said traverse table;
a swivel feed device for pivotally moving said swivel table about said pivot;
a wheel feed device for moving said grinding wheel toward and away from said workpiece;
a measuring device engageable with a reference end surface of said workpiece for generating a signal when said reference end surface is located, through movement of said traverse table, at a predetermined position in the moving direction of said traverse table; and
a numerical controller for controlling said traverse, swivel and wheel feed devices in response to said signal from said measuring device, said numerical controller including:
first feed control means for controlling said traverse feed device so as to move said traverse table from an original position to a reference detecting position which is determined upon engagement with said reference end surface with said measuring device;
feed amount detection means responsive to said signal for detecting a first feed amount through which said traverse table is moved from said original position to said reference detecting position;
first calculation means for calculating the difference between said first feed amount detected by said feed amount detection means and a first predetermined value, said first predetermined value being indicative of a feed amount through which said traverse table would be moved from said original position to said reference detecting position if a workpiece model were supported by said workpiece support means;
second calculation means for calculating based upon said calculated difference second and third feed amounts

through which said traverse table and said grinding wheel are to be moved respectively so that said taper portion of said workpiece can be ground to a desired dimension;

second feed control means for controlling said traverse feed device to move said traverse table by said calculated second feed amount from said reference detecting position;

third feed control means for controlling said swivel feed device to pivot said swivel table by a predetermined angle; and

fourth feed control means for controlling said wheel feed device to move said grinding wheel toward said workpiece by said calculated third feed amount.

4,584,796

NUMERICAL CONTROL GRINDING MACHINE

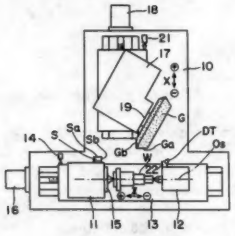
Takao Yoneda, Toyoake, and Yasuji Sakakibara, Hekinan, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 14, 1985, Ser. No. 733,798

Claims priority, application Japan, May 16, 1984, 59-99293; May 23, 1984, 59-105385

Int. Cl.[4] B24B *49/02*

U.S. Cl. 51—165.71 **5 Claims**



1. In a numerical control grinding machine having a wheel head movable in a first direction and rotatably carrying a grinding wheel, a work table movable in a second direction perpendicular to said first direction and carrying a workpiece rotatable about an axis extending in said second direction, a first present position register for storing the position of a cylindrical grinding surface of said grinding wheel in said first direction, a second present position register for storing the position of a shoulder grinding surface of said grinding wheel in said second direction, and feed control means for controlling movements of said wheel head and said work table by reference to said positions stored in said first and second present position registers, the improvement comprising:

first memory means for storing original positions of said wheel head and said work table;

second memory means for storing protruding amounts in said first and second directions, of said cylindrical and shoulder grinding surfaces relative to a wheel head reference point defined on said wheel head;

first calculation means for compensating said protruding amounts stored in said second memory means respectively for dressing infeed amounts against said cylindrical and shoulder grinding surfaces each time said grinding wheel is dressed;

second calculation means for compensating said original positions stored in said first memory means respectively for said protruding amounts stored in said second memory means; and

data setting means for setting said first and second present position registers respectively with said original positions compensated by said second calculation means each time said wheel head and said work table are respectively returned to said original positions.

4,584,797

SANDING DEVICE

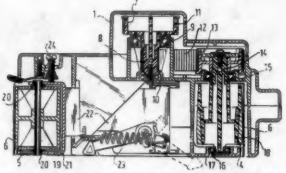
Peter Wanninkhof, Oosterhout, and Antonie J. Moolenaar, Dorst, both of Netherlands, assignors to Skil Nederland B.V., Breda, Netherlands

Filed Apr. 26, 1984, Ser. No. 604,008

Claims priority, application Netherlands, Apr. 26, 1983, 8301475

Int. Cl.[4] B24B *23/06*

U.S. Cl. 51—170 EB **11 Claims**



1. A portable sanding device mainly comprising a housing, a driven roller journalled therein, a motor with a transmission arranged in said housing for driving said roller, a control-roller journalled in a sub-frame movable with respect to said housing and an endless sanding belt passed around said two rollers characterized in that the driven roller (**4**) is provided with a running surface (**18**), the width of which is substantially equal to half the width of the sanding belt (**6**).

4,584,798

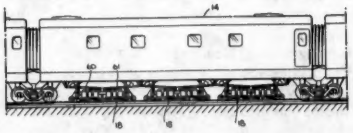
AUTOMATED RAILWAY TRACK MAINTENANCE SYSTEM

Albert Rivoire, North Syracuse, N.Y., assignor to Speno Rail Services Co., East Syracuse, N.Y.

Filed Mar. 29, 1984, Ser. No. 594,546

Int. Cl.[4] B24B *23/00*; G06F *15/46*

U.S. Cl. 51—178 **35 Claims**



1. An automated railway track maintenance system for grinding the head of railway track rails, comprising:

rail head grinding means adapted for positioning under at least one railway vehicle;

means for raising said grinding means;

master signal processor control means at least partially adapted for actuation by an operator in the leading vehicle of a series of railway vehicles for controlling said grinding means; and

slave signal processor control means responsive to said master signal processor control means for controlling said grinding means in accordance with commands from said master signal processor control means;

said master signal processor control means including means for storing an absolute count representative of the distance between an obstacle whose position is located by an operator in the leading vehicle and the position of at least one of said series of vehicles when the operator actuates said master signal processor control means, means for calculating the distance along the rails between the position along the rails for actuating, by said master and slave signal processor control means, said means for raising said grinding means and said position of said at least one vehicle, and means for comparing said absolute count with the distance

between the obstacle and the position of said at least one vehicle when said at least one vehicle has advanced toward the obstacle and while said vehicle is moving at a grinding speed.

4,584,799

METHOD OF FORMING A CONVERGENT LENS IN A PLATE OF TRANSPARENT MINERAL MATERIAL

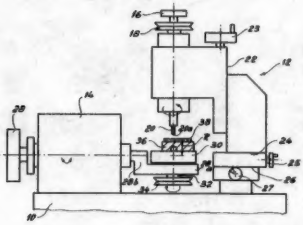
Claude-Michel Juvet, Fleurier, Switzerland, assignor to Comadur SA, La Chaux-de-Fonds, Switzerland

Filed Apr. 2, 1984, Ser. No. 595,899

Claims priority, application Switzerland, Mar. 31, 1983, 1800/83

Int. Cl.[4] B24B *1/00*

U.S. Cl. 51—284 R **11 Claims**



1. A method of forming a circular convergent lens in a plate of transparent mineral material, comprising simultaneously:

rotating said plate about a first axis which is perpendicular to the region where the lens is to be formed and which extends through the center of said region;

grinding said region with a rotating grinding member having a circular operative portion which is of lesser diameter than the lens and which rotates about a second axis contained in a plane containing said first axis; and,

oscillating said plate or said grinding member round a third axis perpendicular to the plane containing said first and second axes, intersecting said first axis and located at a distance from said region equal to the radius of curvature required for said lens;

said second and third axes being spaced a constant distance apart from each other, said operative portion of the grinding member having a concave grinding surface shaped as a fringe portion of a hollow torus whose generating axis coincides with said second axis and whose generating circle has a radius equal to the radius of curvature of the lens, and the distance between said generating axis and the center of said generating circle being equal to the distance between said second and third axes.

4,584,800

BUILDING STRUCTURE INCLUDING A POLYHYPARIC SURFACE

Michael Burt, Haifa; Eli Kent, Herzlia, and Ami Grasman, Haifa, all of Israel, assignors to Morphore Ltd., Kfar Shmariahu, Israel

Filed Feb. 25, 1982, Ser. No. 352,343

Claims priority, application Israel, Mar. 13, 1981, 62353

Int. Cl.[4] E04B *1/32, 1/72*

U.S. Cl. 52—63 **3 Claims**

1. A building structure comprising at least one polyhyparic surface formed of a continuous tensioned web, said at least one polyhyparic surface being formed of a plurality of identical modular hyparic web elements which are seamed together to define a continuous expanse of web material and structural means for supporting said at least one polyhyparic surface and including support means disposed along the periphery of said at least one polyhyparic surface, there being no rigid structure joining the individual hyparic elements of said at least one polyhyparic surface.

4,584,801

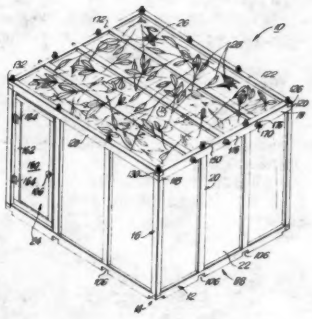
TEMPORARY BUILDING STRUCTURE

Edward A. Weinberger, 86-21 120th St., Richmond Hill, N.Y. 11418

Filed Sep. 5, 1985, Ser. No. 772,645

Int. Cl.[4] E04B *1/346*

U.S. Cl. 52—64 **21 Claims**



1. A kit of constructional elements permitting quick assembly and knock down of a temporary building structure, comprising a plurality of base beams forming a peripheral base frame, the two ends of each base beam being opposingly stepped whereby the stepped ends of adjacent base beams can form an overlap joint at each base corner, aligned apertures formed through the overlap stepped joint, the distal end of each base beam being undercut beneath the step whereby the undercut ends of adjacent beams merge to form a notched corner beneath the overlap joints, a plurality of upright studs having an axially depending pin for projecting through the aligned apertures and into the notched corner, and a retaining member coupling onto the depending pin in the notched corner whereby a pair of adjacent base beams and an upright stud can be secured together by a single retaining member which can be attached and released without lifting of the base frame.

4,584,802

PROTECTIVE STRUCTURE FOR THE FLOOR OF A CONCRETE ENCLOSURE HAVING TO CONTAIN A HIGH TEMPERATURE FLUID

Chantal Casselman, Manosque; Jean C. Malet, Venelles; Yvon Sophy, and Roger Pacton, both of Aix en Provence, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Sep. 28, 1983, Ser. No. 536,506

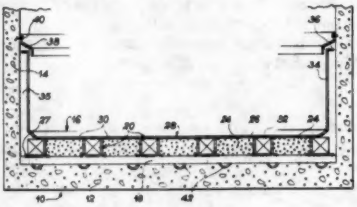
Claims priority, application France, Sep. 30, 1982, 82 16475

Int. Cl.[4] E02D *27/00*

U.S. Cl. 52—169.7 **7 Claims**

1. A protective structure for a concrete floor and walls of a concrete enclosure which is to contain a high temperature fluid, wherein said protective structure comprises a porous layer covering the concrete floor of the enclosure, a support frame made from shaped sections intersecting in accordance with a regular lattice structure, and resting on the porous layer,

a lining filling the cavities defined between the shaped sections and a tight metal skin resting on the support frame and constituted by thin plates fixed to the shaped section and assembled



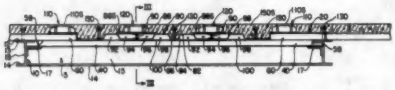
by welds placed along axes of the shaped sections, said metal skin having a peripheral rising portion along the walls of the enclosure, said peripheral rising portion defining an upper free edge positioned above a maximum fluid level in the enclosure.

4,584,803

HIGH STRENGTH CELLULAR METAL FLOOR RACEWAY SYSTEM

Thomas G. Ryan, Bethel Park, Pa., assignor to Cyclops Corporation, Pittsburgh, Pa.

Filed Jul. 5, 1984, Ser. No. 628,292
Int. Cl.[4] E04B *5/48*
U.S. Cl. 52—221 **16 Claims**



1. A cellular flooring system for carrying electrical conductors and the like supported at least in part by spaced-apart longitudinally extending I-beams of the type having a horizontal upper flange, a horizontal lower flange and a vertical web connecting said upper and lower flanges comprising:

(a) plural spaced-apart horizontally disposed upper corrugated deck means, each having at least one deck conduit therein extending transversely with respect to the spaced-apart beams, each upper deck means supported fully above the beams at least in part by the upper flanges of the beams and each upper deck means having an upper surface positioned in a common horizontal plane;

(b) horizontally disposed lower corrugated deck means having at least one deck conduit therein extending transversely with respect to the beams, said lower deck means having an upper surface and having opposite ends thereof positioned beneath opposed end portions of the upper deck means, said lower deck means positioned entirely between the beams whereby the conduit of the lower deck means extends substantially parallel to and beneath at least one end portion of the upper deck conduits and spans the distance therebetween;

(c) support means for supporting the lower deck means between the beams;

(d) access means between the deck conduits of the upper and lower deck means;

(e) horizontally disposed feeder means having at least one longitudinally extending feeder conduit therein extending substantially parallel to said beams and having an upper surface, said feeder means positioned entirely above and supported by the upper surface of the lower deck means whereby the upper surface of the feeder means is substantially coplanar with the upper surface of the upper deck means; and

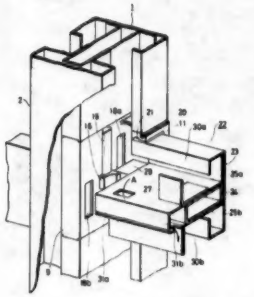
(f) access means between the conduits of the lower deck means and the feeder means.

4,584,804

MECHANISM FOR JOINING A MULLION TO A TRANSOM IN A CURTAIN WALL

Kazuo Tajima, Tokyo, Japan, assignor to Tajima Junzo Seisakusho, Ltd., Tokyo, Japan

Filed Apr. 13, 1983, Ser. No. 484,672
Claims priority, application Japan, Apr. 14, 1982, 57-64141
Int. Cl.[4] E04H *1/00, 3/00;* E06B *7/14*
U.S. Cl. 52—235 **6 Claims**



1. A mechanism for joining a mullion to a transom in a curtain wall construction of a building, comprising:

an inner mullion having at least one notch;

a joiner fitted in said notch, said joiner having a plurality of air passageways in a central portion thereof, and a pair of symmetrically arranged arms, each of said arms having a U-shaped transom receiving portion;

a slider, movable along a vertical bar on said joiner to a first position for receiving a transom and to a second position for restraining said transom, thereby preventing movement of said transom toward an outer side of the building;

a table, connected to said joiner, for receiving and permitting horizontal thermal expansion of said transom, said air passageways being positioned on either side of said transom; and

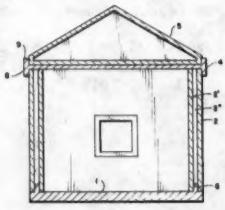
airproofing sealant, fitted into said transom receiving portion of each of said arms.

4,584,805

MODULAR HOUSE CONSTRUCTION

Gad M. Meiry, 175-20 Wexford Ter., Jamaica, N.Y.

Continuation-in-part of Ser. No. 467,468, Feb. 17, 1983, abandoned. This application Dec. 27, 1984, Ser. No. 686,988
Int. Cl.[4] E04B *1/00*
U.S. Cl. 52—264 **20 Claims**



1. A house, comprising a one-piece floor element having a plurality of projections; a plurality of wall elements each com-

posed of two substantially parallel one-piece wall portions each having upper and lower ends and forming therebetween a through-going uninterrupted space extending between and open at said both ends, so that when said wall elements are placed onto said floor element said projections of said floor element form-lockingly engage into said spaces of said wall elements at said lower ends, and a filling material introduced into said spaced of said wall elements through said upper ends so as to move downwardly through said through-going uninterrupted spaces over their entire height on situ to said lower ends and downwardly onto said respective projections of said floor elements; and a one-piece ceiling element having a further projection engageable over said wall element so as to surround the latter at said upper ends, said projections of said floor element vertically engaging into said spaces of said wall elements at said lower ends whereas said projection of said ceiling element engaging over and surrounding said wall elements at said upper ends so as to prevent movement of said wall elements in a substantially horizontal direction both at said lower ends and at said upper ends of said wall elements respectively and to retain said wall elements together, said plurality of wall elements including a first group of wall element having lateral projections and a second group of wall elements having lateral grooves and arranged so that said wall elements are connected with one another by interengaging lateral grooves and projections, whereby said ceiling element, said wall elements, and said floor element are connected with one another only by the respective projections engaging in the respective grooves without fastening elements.

4,584,806

SYSTEM FOR INTERCONNECTING PANELS

Andrew S. Graham, Jr., Laburnum La., Wyncote, Pa. 19095

Filed Mar. 11, 1985, Ser. No. 710,492
Int. Cl.[4] E04C *1/10*
U.S. Cl. 52—285 **10 Claims**

1. A system for interconnecting panels of a carton in edge-to-edge relation, said system comprising connector plates adapted to be fastened to the panels near adjoining edges thereof, each connector plate having a wall spaced from the panel to provide a cavity adjoining the panel wall and said cavities having openings presented toward each other across the panel joint, a bridge plate extended across the panel joint with the ends of the bridge plate extended through said openings into the cavities in the connector plates, each end of the bridge plate and the associated connector plate being provided with apertures in registry with each other, and a spring clip extended across the panel joint and having fastening elements at the ends thereof, one of which projects into registered apertures of a connector plate and the bridge plate and the other one of which projects into registered apertures of the other connector plate and the bridge plate.

4,584,807

COMPOSITE SOFFIT OF PLASTIC MATERIAL AND FURRING STRIPS

Richard W. Bear, 2021-5th Ave. SE., Cedar Rapids, Iowa 52403

Filed Sep. 12, 1983, Ser. No. 530,900
Int. Cl.[4] F04C *1/00*
U.S. Cl. 52—309.2 **15 Claims**

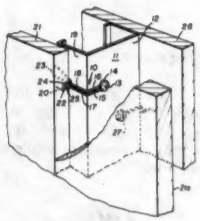
1. A preformed, composite soffit comprising a length of plastic material having a pair of legs and a connecting base to provide a soffit of generally U-shaped configuration in cross-section, the legs having exterior first parallel planar surfaces forming the outer side faces of the legs and the soffit and exterior second planar surfaces at right angles to the first surfaces forming the longitudinal outer end faces of the legs and the soffit, the first surfaces intersecting at right angles an exterior third planar surface parallel to the second surfaces and forming the outer side face of the base and the soffit, the two exterior longitudinal corners of the soffit at the juncture between the first and third surfaces being formed by a first pair of furring strips rectangular in cross-section, the furring strips extending the length of the base and secured to said material, exterior surfaces of the furring strips forming portions of respective ones of said first and third surfaces of the legs and the base.

4,584,808

CONCEALABLE DOUBLE ACTING FASTENER FOR WALLBOARD

Alan C. Wendt, Barrington, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Apr. 9, 1984, Ser. No. 598,420
Int. Cl.[4] E04B *2/00, 2/28*
U.S. Cl. 52—483 **3 Claims**



1. A partition comprising a plurality of wallboards in edge-to-edge array; a stud having a web portion and a flange portion; and a concealed impaling pin which secures abutting wallboards to the stud, said impaling pin comprising a continuous piece of wire having, in sequence:

a bight fastened to the web portion of the stud;

a pair of shoulders connected by the bight and parallel to the web portion of the stud;

a pair of arms between the flange portion of the stud and the wallboard;

a pair of fingers between abutting edges of adjacent wallboards; and

a pair of oppositely oriented talons;

wherein a first arm of the pair extends only to the juncture of the adjacent wallboards, a second arm extends beyond the juncture and loops back to that juncture, and the talon terminating the first arm is impaled in the edge of the wallboard distal to the web portion of the stud and the talon terminating the second arm is impaled in the edge of the wallboard proximate to the web portion.

4,584,809

BEAM FOR SHORING STRUCTURE

Joseph S. Stanford, 36 Longfield Rd., Islington, Ontario, Canada (M9M 3G3)

Filed Dec. 7, 1983, Ser. No. 559,097
Int. Cl.[4] E04C *3/02*
U.S. Cl. 52—690 **17 Claims**

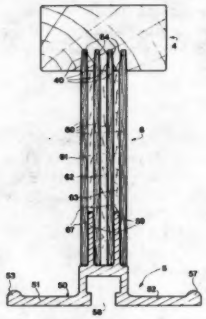
1. Beam, having a top flange, a bottom flange, and a web;

wherein the top flange has a cross-sectional shape that is characterised as bulky, having a substantial height and width, and is made of wood;

wherein the bottom flange has a cross-sectional shape that is characterised as non-bulky being in comparatively slim portions and includes a wide, base portion, and wherein

the bottom flange is formed by the extrusion of an homogeneous material; and

wherein the flanges are joined to the web in such a manner that the two flanges and the web are as one, and together comprise a unitary force-transmitting structure, in that the joint between each flange and the web is so firm and rigid that flexure or strain of the flanges cannot take place



independently of a commensurate flexure or strain of the web;

wherein the web is tailed-in to the top flange, in that at least one slot is formed in the top flange and complementary tails or a tail are formed on the web, and the web is joined to the top flange by glueing the complementary tail or tails into the slot or slots.

4,584,810

METAL SPACE TRUSS

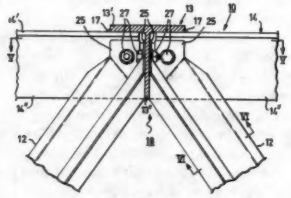
Arne Hill, Malmgårdsvägen 32, S-116 38 Stockholm, Sweden

Filed May 31, 1984, Ser. No. 615,556

Claims priority, application Sweden, Jun. 14, 1983, 8303369

Int. Cl.⁴ E04N *12/00*

U.S. Cl. 52—648 **9 Claims**



1. A metal space truss of the kind comprising two at least generally horizontally extending and vertically spaced lattices, an upper one and a lower one, both of which are composed of two intersecting groups of parallel bars which in the respective lattices are joined to each other in a plurality of nodes, and a plurality of struts, each of which forms an oblique angle with the planes of the two lattices and connects a related node in said upper lattice to another related node in said lower lattice, wherein:

(A) said intersecting bars of said upper lattice consist of T-bars having downwardly directed webs with opposite generally vertically oriented side faces,

(a) said T-bars being joined together where intersecting to form first nodes in each of which said generally vertically oriented web side faces of said T-bars converge in a manner to define between them at least one first inner corner which is unobstructed in a downward direction;

(B) said intersecting bars of said lower lattice have such cross sectional configurations that each of them presents opposite generally vertically oriented lateral face portions,

(b) said bars of said lower lattice being joined together where intersecting to form second nodes in each of which said generally vertically oriented lateral face portions of said lower lattice bars converge in a manner to define between them at least one second inner corner which is unobstructed in an upward direction;

and wherein

(C) each of said struts has an upper end portion entering obliquely from below a first inner corner of a related first node in said upper lattice and presenting oblique surface portions adapted for making surface contact with one vertically oriented web side face on each of the two T-bars intersecting in said related first node,

(c) said upper strut end portion being secured by at least one bolt connection directly to each of the two webs of said two intersecting T-bars so as to also form all by itself between said T-bars a node-stabilizing connector; and

(D) each of said struts has a lower end portion entering obliquely from above a second inner corner of a related second node in said lower lattice and presenting oblique surface portions adapted for making surface contact with one vertically oriented lateral face portion on each of the two lower lattice bars intersecting in said related second node,

(d) said lower strut end portion being secured by at least one bolt connection directly to each of said two intersecting lower lattice bars so as to also form all by itself between said lower lattice bars a node-stabilizing connector.

4,584,811

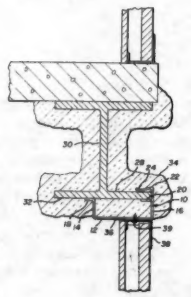
FURRING BRACKET FOR FIREPROOFED BEAMS

Henry A. Balinski, Hoffman Estates, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Aug. 27, 1984, Ser. No. 644,624

Int. Cl.⁴ E04C *5/00*

U.S. Cl. 52—714 **9 Claims**



1. A construction system for a cavity shaft wall, said system comprising:

a steel beam and a generally channel-shaped furring bracket fastened to the beam;

said beam comprising an upright web, and a pair of laterally opposing flanges extending at right angles from the upright web;

said furring bracket comprising a horizontal web portion, an upright first leg entending from one edge of the horizontal web, a horizontal shoulder extending from the upper margin of the leg, an upright second leg extending from the opposite edge of the horizontal web and beyond the first leg, a clamp extending angularly toward the horizontal web and the first leg from the upper margin of the second leg, and a tab struck out from the second leg and

extending laterally toward but falling short of the first leg in the plane of the shoulder;

the clamp and the tab defining a slot wherein a flange of the steel beam rests and the shoulder of the furring bracket being fastened to a flange of the beam.

4,584,812

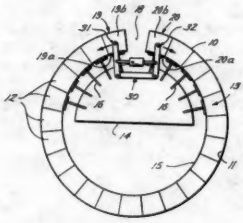
REFRACTORY BRICK RING TIGHTENING DEVICE

John Miskolczi, Jr., 10631 Sagevale, Houston, Tex. 77089

Filed Nov. 23, 1983, Ser. No. 554,538

Int. Cl.[4] E04B *1/32*

U.S. Cl. 52—749 **6 Claims**



1. An apparatus for tightening a ring of refractory brick in order to accommodate the installation of a key brick into a key brick space of such a refractory brick ring to tightly close and complete the ring, the key brick space being bordered on either side by first and second opposing bricks, each including an outer exposed face, comprising:

(a) an expansion frame comprising

(i) a first extension bar having a working end and a connecting end and including an extended member connected transversely to the first extension bar proximate the working end of the first extension bar, the extended member of the first extension bar being selectively attachable to such a first brick at a point on the first brick remote to the key brick space on the outer exposed face of such a first brick; and

(ii) a second extension bar having a working end and a connecting end, the connecting end of the second extension bar being pivotally interconnected with the connecting end of the first extension bar, the second extension bar further including an extended member connected transversely to the second extension bar proximate the working end of the second extension bar, the extended member of the second extension bar being selectively attachable to such a second brick at a point on the second brick remote to the key brick space on the outer exposed face of such a second brick; and

(b) power means associated with said expansion frame for providing outwardly opposing force on the working end of the first extension bar and the working end of the second extension bar whereby, in use, circumferential compressive force is exerted on the refractory brick ring remotely from the key brick space to tighten the ring.

4,584,813

METHOD FOR INSTALLING A HANGER FOR A STRUCTURAL MEMBER

John T. Hudson, 4018 E. Devonshire, Phoenix, Ariz. 85018

Filed Apr. 18, 1983, Ser. No. 485,596

Int. Cl.[4] E04B *1/38*

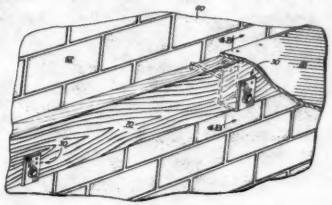
U.S. Cl. 52—744 **3 Claims**

1. A method of securing a structural beam member to a masonary wall in a generally horizontal position, said method comprising:

(a) breaking away portions of the wall at selected locations;

(b) providing a hanger having a generally U-shaped bracket and anchor means projecting rearwardly therefrom;

(c) placing said anchor member in said broken away area extending generally horizontally into said wall a distance less than the width of said wall with said bracket in a generally upwardly opening position at said wall;



(d) grouting said broken away area to secure said bracket in place at the wall surface; and

(e) allowing the grout to set and placing the structural member in the bracket in the generally horizontal position at the wall surface.

4,584,814

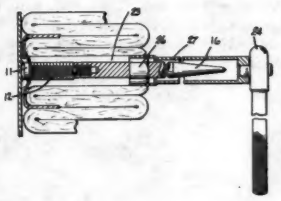
METHOD AND APPARATUS FOR FASTENING AN INSULATION MODULE TO A SURFACE

Mack A. Hounsel, Cypress, Tex., and Anthony E. Cimochowski, Sedalia, Colo., assignors to Manville Corporation, Denver, Colo.

Filed Feb. 21, 1984, Ser. No. 581,928

Int. Cl.[4] E04B *1/62*; F23M *5/00*

U.S. Cl. 52—747 **8 Claims**



1. Method for fastening an insulation module against a surface comprising the steps of:

joining a first end of a stud member to said surface;

connecting a pilot tool to a second end of said stud member opposite to said first end;

impaling said insulation module onto said pilot tool and said stud member;

passing an engaging member over said pilot tool and into contact with said stud member; and

attaching said engaging member to said stud member and against said module so as to secure said module against said surface.

4,584,815

FLANGE HANGER

Joseph S. Haven, Hopkinton, and Gary W. Blanchard, Newton, both of Mass., assignors to Hambro Structural Systems Ltd., Ottawa, Canada

Filed Oct. 26, 1984, Ser. No. 665,155

Int. Cl.[4] E04C *3/293, 3/16*

U.S. Cl. 52—327 **7 Claims**

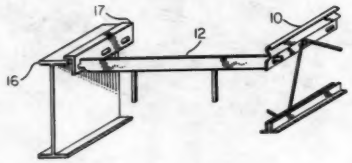
1. In a system for the erection of composite steel and concrete floors of the type wherein a plurality of steel joists are

arranged in parallel and connected during erection by removable spanner bars positioned in slots formed in the top chord portion of said joists, the improvement comprising:

means for supporting one end of a spanner bar adjacent a steel building frame member having a steel top flange,

said means including a horizontally elongated flange hanger welded to said top flange,

said flange hanger having a first leg for welding to said building frame member and a substantially flat second downwardly depending leg,



said downwardly depending leg being provided with a plurality of horizontally elongated slots disposed horizontally of each other and being adapted to receive one end of a plurality of spanner bars,

said flange hanger being welded as aforesaid to said steel top flange for providing a means for transmitting horizontal and vertical forces from said spanner bars to said building frame during building construction and for permitting removal of said spanner bars when said concrete as been poured and set and said spanner bars are no longer required.

4,584,816

MACHINE FOR WRAPPING AND GROUPING PRODUCTS

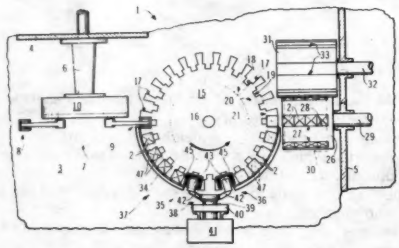
Riccardo Mattei, and Antonio Gamberini, both of Bologna, Italy, assignors to G.D. Societa per Azioni, Bologna, Italy

Filed Nov. 16, 1984, Ser. No. 672,338

Claims priority, application Italy, Dec. 7, 1983, 3649 A/83

Int. Cl.[4] B65B *35/30, 11/28*

U.S. Cl. 53—171 **4 Claims**



1. An improved machine for wrapping and grouping products comprising:

a first wrapping wheel for wrapping individual products;

a second wheel for forming and transferring groups constituted by products arranged side-by-side edgewise with their contacting edges in a plane normal to the longitudinal dimensions of said groups, said second wheel being disposed downstream of said first wheel in the direction of advancement of said products;

a third wrapping wheel for wrapping said groups;

a conveying and overturning apparatus for said products disposed between said first wheel and said second wheel, said apparatus having a conveyor constituted by a disk with radially opened compartments for receiving said products in a respective compartment, said first wheel, said disk and said second wheel and third wheel rotating with intermittent motion; and

means disposed along the path of said conveyor for transferring each of said products from a first compartment to a second compartment and for overturning it during the course of said transfer, said means for transferring said product comprising two gripping elements which are radially aligned with the positions occupied by two different compartments of said disk during the course of each halt stage thereof, and means for driving said gripping elements with intermittent rotary motion through arcs of 180° about an axis radial to said disk.

4,584,817

CAPSULE SEALING APPARATUS

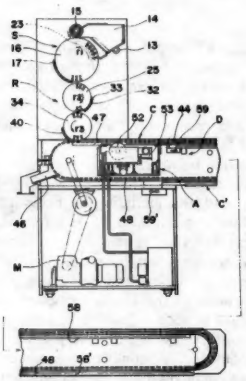
Taizo Yamamoto, Osaka, and Hirokazu Konishi, Sakurai, both of Japan, assignors to Nippon Elanco Kabushiki Kaisha, Osaka, Japan

Filed Mar. 11, 1985, Ser. No. 710,384

Claims priority, application Japan, Mar. 12, 1984, 59-47771; Sep. 10, 1984, 59-190247

Int. Cl.[4] B65B *51/02*

U.S. Cl. 53—329 **6 Claims**



1. A capsule sealing apparatus which comprises, in combination:

a rectifying means including a rotary drum having its outer peripheral surface formed with at least one circumferential row of circumferentially equally spaced recesses for the support of closed capsules therein, said rectifying means also including a rectifying member for rectifying the closed capsules, received in and transported by said rotary drum towards a transfer station, so as to assume a predetermined posture;

a conveyance means including a generally endless slat having at least one row of oblong openings spaced equally from each other over the entire circumference thereof, and back-up members for supporting the capsules, which have been transferred onto and received in the oblong openings in the slat, from below;

a liquid binder applying means disposed on the path of movement of the closed capsules being transported by the slat for applying a liquid binder to the circumference of each of the closed capsules, said applying means comprising a bath for accommodating a predetermined quantity of liquid binder and an applicator wheel supported for rotation with a portion thereof immersed in the liquid binder within the bath, said applicator wheel as it rotates being operable to apply the liquid binder to the circumference of each of the closed capsules;

a positioning means for bringing each of the capsules being transported by the slat, into alignment with the applicator wheel;

a guide means including at least one pair of arcuate guide members rigidly mounted on the back-up members at a location adjacent the applicator wheel, said arcuate guide members being curved to follow the curvature of the applicator wheel such that, during the transportation of the closed capsules past the liquid binder applying means, each of said closed capsules is caused to ride over the arcuate guide members while rolling a number of revolutions about their own longitudinal axis, said liquid binder being applied from the applicator wheel while each capsule undergoes the rolling motion in contact with the applicator wheel; and

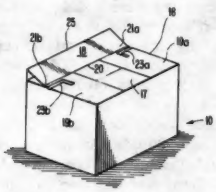
a drying means for drying the liquid binder which has been applied to each of the closed capsules to provide a completely sealed capsule.

4,584,818

APPARATUS FOR AUTOMATICALLY CLOSING L-SLIDE LOCK CARTONS

John Plaskett, Dallas, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Aug. 20, 1985, Ser. No. 767,594
Int. Cl.[4] B65B *7/24*
U.S. Cl. 53—374 **16 Claims**



1. Apparatus for automatically closing the top of a case having an open closing flap and L-slide lock slots for receiving opposite free end corners of the closing flap, the cases travelling transverse to their longitudinal axes and travelling intermittently, the cases being stationary during the operation of the apparatus, the apparatus comprising:

(a) means for holding a case at a predetermined stationary position relative to the apparatus, the case having a top portion which includes an open closing flap connected to the top of the case, the closing flap having a free longitudinal edge and opposite free end corners, the top portion further including L-slide lock slots for receiving respective free end corners of the closing flap;

(b) means for folding the open closing flap to form a longitudinal fold in the closing flap while the case is held stationary, the fold being between the top of the case and the free longitudinal edge of the closing flap so that the free longitudinal edge of the closing flap is positioned at about a level with a top level of the case and the opposite free end corners of the closing flap are positioned adjacent respective L-slide lock slots; and

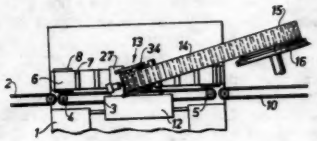
(c) means for tucking the opposite free end corners of the closing flap into the respective L-slide lock slots while the case is held stationary, the tucking means including means for guiding the longitudinal fold of the closing flap to a position at about a level with a top level of the case to cause each of the free end corners to enter the respective L-shaped slots and thereby close the top of the case.

4,584,819

ARRANGEMENT FOR THE APPLICATION OF OBJECTS TO PACKING CONTAINERS

Jan Hakansson, Eslöv, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Jun. 12, 1984, Ser. No. 619,982
Claims priority, application Sweden, Jun. 23, 1983, 8303620
Int. Cl.[4] B65B *19/34*
U.S. Cl. 53—410 **9 Claims**



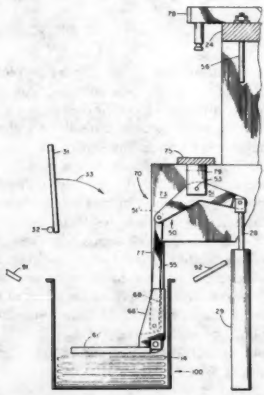
1. Apparatus for the individual application of elongated objects to packing containers, said apparatus comprising a conveyor for advancing the packing containers, driving means for advancing said objects to a predetermined position for transfer to the packing containers, said driving means being supported by a carriage movable along a portion of the conveyor to perform a working stroke synchronously with movement of the conveyor wherein said driving means cooperates with a cutting means and a transfer means so that said objects are applied to said packing containers in a predetermined angular position with respect to said packing container, said driving means, said cutting means and said transfer means being inclined relative to the path of feed of said packing containers, said objects advanced to said driving means along a path extending at the same angle of inclination as the feed path of said packing containers.

4,584,820

INDIVIDUAL BAG FOLDER AND CARTON LOADER AND METHOD FOR OPERATION THEREOF

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 329,371, Dec. 10, 1981, abandoned.
This application Apr. 29, 1985, Ser. No. 727,202
Int. Cl.[4] B65B *63/04*
U.S. Cl. 53—429 **21 Claims**



1. A method for sequentially folding, loading and packing a plurality of thin, limp, sheet-type articles into a receptacle, comprising the following steps:

A. sequentially delivering each article of said plurality of aritcles to a folding station having a removable article

support platform which supports an article at said station, and a folding member in standby position, said folding member in said standby position being adapted to engage with at least one portion of said article for folding said one portion to overlie another portion of said article;

B. folding said article by moving said folding member about a pivot axis from said standby position to a folding position, where said one portion is folded to overlie said another portion, thereby folding said article at least once producing a folded article, said folded article being spaced from and aligned with the bottom of a receptacle therefor while supported by said platform;

C. loading and packing said folded article by removing said platform from said folding station and from supporting said folded article and simultaneously propelling said folding member, including the pivot axis thereof, toward said bottom and into said receptacle to push and pack said folded article toward said bottom while said folding member is in its folding position; and

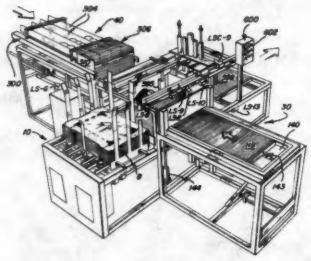
D. returning said folding member including the pivot axis thereof to said folding station and to said standby position and, returning said platform to said folding station so that it can receive and support another article to be folded.

4,584,821

AUTOMATIC CARTONING MACHINE AND METHOD FOR PACKAGING ARTICLES SUCH AS FRUIT

John L. Booth, Vero Beach, Fla., assignor to Booth Manufacturing Co., Ft. Pierce, Fla.

Filed Aug. 9, 1982, Ser. No. 406,293
Int. Cl.[4] B65B *35/30*
U.S. Cl. 53—448 **5 Claims**



4. A method for automatically forming a completed carton containing articles of varying sizes such as fruit in cells of protective expanded honeycomb comprising:

feeding to and positioning a carton blank in a work station,

feeding a honeycomb blank to said work station,

expanding said honeycomb blank into expanded cell-containing honeycomb at said work station directly above said carton blank positioned in said work station,

feeding a mutiplicity of said articles to be cartoned to said work station and individually depositing them in separate cells of said expanded honeycomb resting on the top surface of said carton blank to provide an article filled expanded honeycomb (AFEH) on said carton blank,

providing a multilateral mandrel defining substantially the entire periphery of said carton,

positioning said mandrel directly above said carton blank and surrounding said AFEH,

moving said mandrel surrounded AFEH from said work station to a package forming position,

applying glue to partions of said carton blank during said moving,

folding said carton blank at said position with the aid of said mandrel into a base portion supporting said AFEH plus side and end portions to closely embrace the sides and ends of said AFEH by bending said portions about the lower end of said mandrel and into contact with the mandrel sides to create said completed carton,

withdrawing said mandrel from said completed carton at said position, and

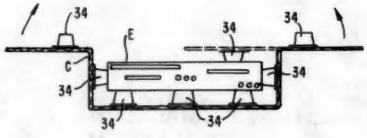
removing said completed carton from said machine.

4,584,822

METHOD OF PACKING OBJECTS AND PACKING THEREFOR

Alfred W. Fielding, Allendale, N.J.; George T. Bertram, Sandy Hook, Conn.; Semyon Krislav, Stamford, Conn., and Joel Askinazi, Trumbull, Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Mar. 7, 1984, Ser. No. 587,182
Int. Cl.[4] B65B *23/00, 55/20*
U.S. Cl. 53—452 **10 Claims**



1. A method of packing for providing low peak deceleration protection for an object, comprising the steps of:

thermoforming a thermoforming material into a flexible dimensionally stable shell of a predetermined configuration having a chamber therein, said predetermined configuration being related to the object to be packed and related to a selected container, and said dimensionally stable shell being sufficiently thin and flexible so as to transmit through said shell a substantial portion of any impact forces applied to the outer surface of said shell;

filling said chamber with a foam material in a manner such that said foam material substantially fills and conforms to the shape of said chamber and such that said foam material has a molded density of less than or equal to one and one-half pounds per cubic foot, said flexible dimensionally stable shell filled with said foam material providing a foam filled cushion packing element;

positioning said foam filled cushion packing element in said selected container; and

placing said object to be packed in said container in contact with the outer surface of said dimensionally stable shell of said foam filled cushion packing element so that said object is supported and protected by said cushion packing element against shock and vibrational loads.

4,584,823

IMPROVED METHOD AND APPARATUS FOR BLOW MOLDING IN A SINGLE BLOW MOLDING OPERATION A CONTROLLED DROP BOTTLE

Dieter H. Nagel, Elk Grove Village, Ill., assignor to Heinz Plastic Mold Co., Elk Grove Village, Ill.

Continuation of Ser. No. 501,648, Jun. 6, 1983. This application Mar. 11, 1985, Ser. No. 710,421
Int. Cl.[4] B65B *47/10*
U.S. Cl. 53—453 **13 Claims**

8. A method of forming and filling a droplet dispenser bottle for dispensing therefrom controlled drops in a single blow-molded operation using at least one sectional molding apparatus which is arranged to enclose a length of thermoplastic plastic tubing within said molding apparatus to seal closed the lower end of said tubing and to form within said molding assembly a fluid container portion for said bottle comprising the steps of:

extruding a length of thermoplastic tubing;

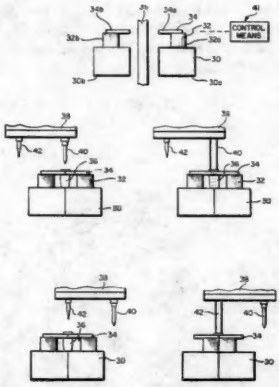
severing said length of thermoplastic tubing which is disposed within said molding apparatus;

holding said severed length of thermoplastic tubing by means of a holding jaw;

filling the fluid container portion of said bottle formed in said molding assembly by means of a fill tube which is lowered into said severed length of thermoplastic tubing and injecting a fluid through said fill tube to fill said container portion; retracting said fill tube from said severed length of thermoplastic tubing;

moving a tip forming core over said severed length of thermoplastic tubing;

lowering said tip forming core into said severed length of thermoplastic tubing;



closing a head jaw means which is of a two-piece construction about said severed length of thermoplastic tubing to form a tip portion integrally with said fluid container portion;

forming by means of said tip forming core and said head jaw means a cone-shaped orifice and a cylindrical orifice that is in fluid communication with said cone-shaped orifice and said fluid container portion within said tip portion which are proportioned to dispense a precisely controlled drop of fluid from said fluid container portion when a compressive force is applied to said fluid container portion retracting said tip forming core from said tip portion of said fluid container.

4,584,824

SUGAR CANE HARVESTER

Shota Hiyamuta, Sakai, Japan, assignor to Kubota, Ltd., Japan

Filed May 12, 1983, Ser. No. 494,020

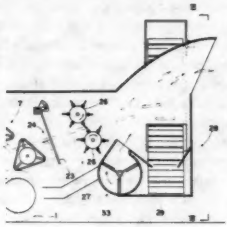
Claims priority, application Japan, Jul. 26, 1982, 57-130103; Feb. 26, 1983, 58-31226; Feb. 28, 1983, 58-32511

Int. Cl.[4] A01D *45/10*

U.S. Cl. 56—13.9 **11 Claims**

1. In a sugar cane harvester having a harvester body, conveyor means mounted forwardly of said harvester body for conveying harvested sugar cane stalks along a defoliating path in a direction parallel to the direction of the stalks, and defoliating means for stripping leaves from the stalks conveyed along said defoliating path,

ssid sugar cane harvester including a plurality of separating means disposed downstream with respect to said defoliating means in the sugar cane conveyance direction along said defoliating path and arranged side by side transversely relative to the defoliating path, said separating means for separating leaves attached to the sugar cane stalks therefrom in response to the passage of the sugar cane stalks through spaces defined between adjacent ones of said separating means, and wherein each said separating means includes a rod-shaped member inclined relative to said defoliating path such that a lower portion of said rod-shaped member is located further rearward of the



harvester body, and wherein upper ends of said rod-shaped members are rigidly fixed to said harvester body and supported in a cantilever form.

4,584,825

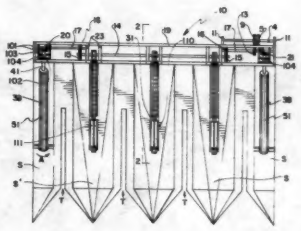
ATTACHMENT FOR A HARVESTER FOR PICKING UP DOWNED CORN STALKS

Cecil G. Atkinson, Rte. 1, Box 149, White City, Kans. 66872

Filed Feb. 10, 1984, Ser. No. 579,125

Int. Cl.[4] A01D *45/02*

U.S. Cl. 56—119 **9 Claims**



1. A harvester for gathering stalks of corn or the like which may not necessarily be vertically upright in the field comprising in combination:

a plurality of snouts laterally spaced from each other having a throat area between adjacent snouts defining passageways through which the stalks of corn are adapted to pass,

roller means carried on the top surface of the outer snouts,

and means for pivoting said roller means at one end thereof about an axis transverse to the direction of travel of the harvester.

4,584,826

TOMATO HARVESTER

Thomas S. Bettencourt, Isleton, and Darryl G. Bettencourt, Lodi, both of Calif., assignors to Blackwelders, Rio Vista, Calif.

Continuation-in-part of Ser. No. 469,003, Feb. 23, 1983, abandoned. This application Feb. 29, 1984, Ser. No. 584,823

Int. Cl.[4] A01D *46/00*

U.S. Cl. 56—327 R **10 Claims**

1. A single row tomato harvester for harvesting a row crop planted in parallel beds of identical width defined on each side by a furrow, including in combination:

a tractor fully supported on its own wheels, the wheels being spaced apart widthwise at a distance sufficient to bridge a planted bed and ride in its furrows, said tractor having its own motive power plus a power-take-off unit,

a harvester assembly having no motive power, partially supported on wheels spaced apart widthwise at substantially the same distance as those of the tractor, and

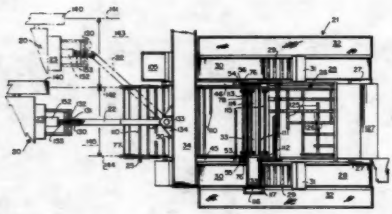
a tongue pivotally connected at one end to said tractor and at its other end to said harvester, said harvester thereby being connected to and partially supported by said tractor, and whereby said harvester assembly and tractor can be offset so that said harvester assembly can harvest one bed while said tractor passes over an already harvested bed or a bed-free area, so that the tractor does not damage unharvested beds,

said harvester assembly comprising,

a main frame supporting all the other elements of said assembly and made up only five main members, namely of two parallel longitudinal beams, one on each side of said assembly, spaced apart from each other and each having front and rear ends, and three transverse cross members joined to said beams and spaced apart from each other, there being a front cross member adjacent to the front end of said frame, to which said tongue is pivotally attached a rear cross member adjacent to the rear end, and an intermediate cross member between them, all said beams and cross members being approximately on the same horizontal plane,

said longitudinal beams, each supporting one of two parallel, upwardly extending vertical columns with upper bracket members at upper ends thereof, near and forward of said intermediate cross member,

a pair of bracket assemblies secured to said beams in transverse alignment with each other and extending down below said beams,



a pair of truck assemblies pivotally secured to said bracket assemblies and having wheels for support of said main frame located entirely below the horizontal plane of said main frame, each wheel being rotatably mounted on a stub shaft, there being no axles, shafts, or other cross members extending across said frame below said frame cross members,

a pickup unit pivotally attached at a rear end to said upper bracket members and extending forwardly from them and having cutting means at the forward end and elevating means extending rearwardly and upwardly therefrom,

power means for raising and lowering the front end of said pickup unit, pivotally secured to said main frame beams and to said pickup unit,

a separator unit having means for separating the tomatoes from the plants, secured to said intermediate and rear cross-members, to the rear of said pickup unit and in between said beams,

a conveyor and sorting system comprising a series of conveyor units each secured to said main frame and providing means outboard of said beams for conveying the separated tomatoes from the rear of said separating unit back on each side of said separator unit past sorting means supported outboard of said conveyor units by said main frame for culling the tomatoes and to delivery means to the front end of said harvester, forward of said separator unit and above said front cross-beam, thereby shortening the harvester length, and

hydraulic means connected to said tractor power-take-off unit and having conduits extending therefrom to all the powered systems of said harvester assembly,

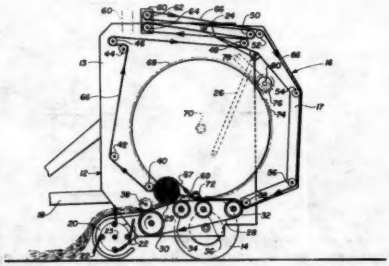
whereby, when said power means raises said pickup unit and holds it up above the bottom of said main frame, said harvestor assembly can offset from the tractor to an adjacent row and can by pulled by said tractor along and over an unharvested row of said crop without damaging said crop.

4,584,827

DRIVE MECHANISM FOR ROLL BALER

John A. Merkey, Stevens; Francis L. Uhland, Jr., Narvon; Willis R. Campbell, Ephrata, and Donald F. Bowden, Jr., Gordonville, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jan. 25, 1985, Ser. No. 694,886
Int. Cl.[4] A01D *59/00*
U.S. Cl. 56—341 **4 Claims**



1. In a roll baler including upper and lower bale forming means cooperating to define a bale starting zone, said upper bale forming means extending around a single indexing guide member, said single indexing guide member being connected between a pair of disks and being located in a home position for disposing said upper bale forming means proximate to said lower bale forming means at the rear of said bale starting zone, the improvement comprising:

drive means adapted for engagement with the peripheral edges of said pair of disks for rotating said pair of disks in a direction to cause movement of said single indexing guide member from said home position in a substantially circular path of travel.

4,584,828

BRUSH RAKE

Robert J. Bentley; William G. Bentley, both of E. Main Rd., R.R. 2, and Alan D. Waters, E. Main Rd., R.R. 45B, all of Ripley, N.Y. 14775

Filed May 7, 1984, Ser. No. 607,515
Int. Cl.[4] A01D *46/28, 78/04*
U.S. Cl. 36—377 **21 Claims**

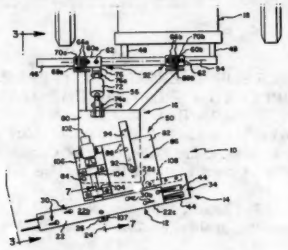
1. A brush rake for removing brush from grape vines arranged in a row and for mounting on a vehicle movable lengthwise of said row, said rake comprising in combination:

a power driven wheel carrying at least one row of teeth projecting outwardly of a peripheral surface thereof for removing brush from said vines incident to rotation of said wheel about its axis of rotation;

a comb for removing brush from said teeth; and

mounting means for mounting said wheel and said comb on

said vehicle and to arrange said axis to tilt vertically downwardly and forwardly away from said vehicle and to



tilt laterally away from said row, as said vehicle moves lengthwise of said row.

4,584,829

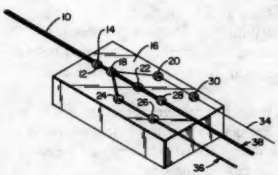
THREAD SEPARATION METHOD

H. Jessie Heinke, 1150 Shady Hill Dr., Columbus, Ohio 43221

Filed Jun. 14, 1985, Ser. No. 744,532

Int. Cl.[4] B65H *57/16, 57/00*

U.S. Cl. 57—2.3 **7 Claims**



1. A method of separating individual strands of material form a bundle of strands collected as a length of embroidery floss comprising,

aligning the bundle of floss along a straight line,

threading a plurality of said strands through a first slot in a stationary projection,

pulling said strands only partially through said slot,

separating the end of at least one strand from said strands which have been partially pulled through the first slot,

threading the separated strand through a second slot in a different stationary projection,

threading the end of at least one other strand from the remaining strands which have been partially pulled through the first slot through a third slot in another stationary projection, the second and third slots being out of alignment with each other, and

pulling the strands from a location beyond the second and third slots until all strands in the bundle have passed the first slot and the strands threaded through the second and third slots have passed the second and third slots to thereby separate the strands passing through the second and third slots from each other and from any strands passing through the first slot but not passing through the second and third slots.

4,584,830

METHOD FOR PRODUCING A FIBER-SPUN YARN

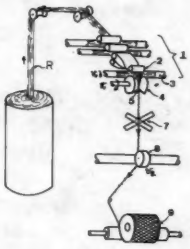
Jean L. Faure, Noley, and Marcel Schoumacher, Roanne, both of France, assignors to ASA S.A., Villeurbanne, France

Filed Jan. 22, 1985, Ser. No. 693,624

Claims priority, application France, Feb. 24, 1984, 84 03083

Int. Cl.[4] D01H *5/28;* **D02G** *3/36, 3/38*

U.S. Cl. 57—328 **8 Claims**



1. A process for making a fiber-spun yarn of the type comprising an internal core formed of discontinuous fibers, said core being covered with an external sheath also formed of discontinuous fibers, of the type according to which:

the fibers forming the inner core are subjected to a momentary false twist operation by a false twist spindle; and

elementary fibers are projected onto the liner core upstream of the false twist spindle by means of a movable guiding surface onto which said elementary fibers are tangentially delivered and which has a tendency to exert a pulling force on a free end of said elementary fibers, said core being moved tangentially with respect to said guiding surface along a direction which converges with the direction in which the fibers are moved by said guiding surface, wherein the improvement comprises:

drawing both the fibers which will make up the internal core and the fibers which will make up the external sheath with a common drawing system; and

at an outlet of the drawing system, delivering a first part of the drawn fibers onto the movable guiding surface, and directing a second part of said fibers initially away from said movable guiding surface, but then directing said second part of the fibers into tangential contact with the moving guiding surface downstream of the location where the first part of the fibers is delivered to the movable guiding surface, said first part of the fibers thereby forming the external sheath and said second part the internal core.

4,584,831

DEVICE FOR THE FALSE TWISTING OF THREADS BY MEANS OF FRICTION DISKS

Friedrich Schuster, and Günther Paul, both of Hammelburg, Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer KGaA, Fed. Rep. of Germany

Filed May 2, 1985, Ser. No. 729,551

Claims priority, application Fed. Rep. of Germany, May 25, 1984, 3419484

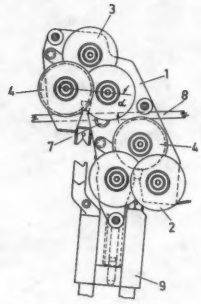
Int. Cl.[4] D01H *7/92;* **D02G** *1/08*

U.S. Cl. 57—339 **12 Claims**

1. A device for false twisting threads, comprising:

a first and a second false twisting unit; each of the units comprises a plurality of three parallel shafts which are arranged to define the corners of an equilateral triangle; the shafts of both of the units extending parallel; each shaft carrying respective friction disks in a spaced apart stack on the shaft; the shafts being so spaced and the disks being so sized that the disks on the shafts of each unit are interleaved;

a base for the first and the second units;
each of the units having a respective drive whorl for driving one of the shafts of the respective unit to rotate; the other shafts of the respective unit being connected with the one shaft thereof for the shafts to be rotated together by driving of the respective drive whorl;
a drive belt movable in a drive direction past and between the first and the second units on the base, and the belt



being for contacting the drive whorls of both units and for rotating the drive whorls; and
the first unit being slightly upstream of the second unit with respect to the motion of the drive belt; the drive whorl of the first unit being further upstream of the drive belt and the drive whorl of the second unit being further downstream of the drive belt; the disks of each unit being spaced from the disks of the other unit.

4,584,832

FIBER FEED CHANNEL ARRANGEMENT FOR OPEN-END FRICTION SPINNING

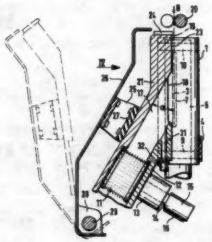
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Uberkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,875

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1983, 3336547

Int. Cl.⁴ D01H *7/892*

U.S. Cl. 57—401 **22 Claims**



1. Arrangement for open-end friction spinning comprising:
drivable friction surface means defining a yarn formation zone,
and fiber feed means including a fiber feed channel means having a fiber feed opening facing the yarn formation zone and defining a fiber distribution zone in said yarn formation zone, wherein the fiber feed channel means includes at least two channel component parts divided by a partitioning line extending in the channel longitudinal direction, one of which channel component parts is movable with respect to the at least one other channel component part to facilitate access to the yarn formation zone and at least the fiber feed opening area of the fiber feed channel.

4,584,833

APPARATUS FOR EMERGENCY INTERRUPTION OF FIBER SUPPLY TO A SPINNING UNIT OF OPEN-END SPINNING MACHINES

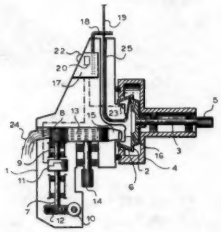
Jaroslav Dykast; Frantisek Cáda, both of Usti n/Ori, and Miroslav Kubovy, Dolni Dobouc, all of Czechoslovakia, assignors to Vyzkumny ustav bavinarsky, Usti n/Ori, Czechoslovakia

Filed Sep. 7, 1984, Ser. No. 648,724

Claims priority, application Czechoslovakia, Sep. 13, 1983, 6664-83

Int. Cl.⁴ D01H *13/14, 1/135*

U.S. Cl. 57—405 **8 Claims**



1. In an apparatus for the emergency interruption of an open-end spinning machine having
a spinning rotor having a slipping wall and closeable by a cover; a fiber supply device;
means for driving the fiber supply device;
an electromagnetic coupling interposed between the means for driving the fiber supply device and the fiber supply device;
an electric thread breakage detector;
the thread breakage detector being supplied by an electric circuit in which there is interposed a reed relay;
the improvement comprising
a sensing unit disposed within that portion of the wall of the cover that extends into the spinning space of the spinning rotor, the sensing unit being adapted to respond to the accumulation of excess of unspun fibers in the rotor spinning space by opening the reed relay to de-energize the electromagnetic coupling, whereby to disengage the fiber supply device in case of an emergency even if the thread breakage detector fails.

4,584,834

GAS TURBINE ENGINE CARBURETOR

John M. Koshoffer, Forest Park; Edward E. Ekstedt, Montgomery; Billy P. Samuel, and Edward I. Stamm, both of Madeira, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

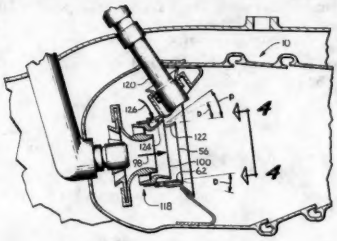
Filed Jul. 6, 1982, Ser. No. 395,536

Int. Cl.⁴ F02C *7/22*

U.S. Cl. 60—737 **2 Claims**

1. A carburetion assembly for mixing fuel from a fuel nozzle and air from a compressor and channelling the combined fuel and air mixture through an outlet end of a tubular member and adjacent to a fuel ignitor in a combustor of a gas turbine engine wherein:

said outlet end of said tubular member includes a pitcher lip portion, radially outwardly flared over an arcuate portion



of said aft end of said tubular member for directing said fuel and air mixture adjacent to said fuel ignitor.

4,584,835

BLADE FASTENING STRUCTURE FOR TORQUE CONVERTER OR FLUID COUPLING

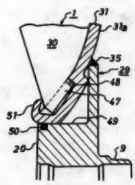
Tetsuro Nishi, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Division of Ser. No. 522,581, Aug. 12, 1983, abandoned. This application Sep. 25, 1984, Ser. No. 654,522

Claims priority, application Japan, Aug. 12, 1982, 57-122659

Int. Cl.[4] F16D *33/00*

U.S. Cl. 60—330 **4 Claims**



1. A blade fastening structure for a torque converter or fluid coupling, said torque converter or fluid coupling have a shell formed of a shell body having an annular concave inner surface and welded at an inner peripheral portion of said shell body to a hub concentric with an output shaft, and a plurality of semi-elliptic impeller blades annularly disposed between said inner surface of said shell and a core ring and fastened to said shell, the blade fastening structure comprising a plurality of radial recesses formed annularly in said inner peripheral portion of said shell body, projections formed integrally with said impeller blades at their inner peripheral end portions and fitted in said recesses, and an annular collar portion at the inner peripheral end of said impeller blades, said collar having a plurality of individual extensions formed integrally with said shell body and arranged annularly at locations corresponding to said recesses in said shell body and being bent over against an inner peripheral edge of said impeller blades for engaging said projections of said impeller blades with said recesses in said shell body and caulking said impeller blades to said concave inner surface of said shell body.

4,584,836

STEAM TURBINE RESTART TEMPERATURE MAINTENANCE SYSTEM AND METHOD

Thomas R. McClelland, Roselle, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 29, 1985, Ser. No. 696,223

Int. Cl.[4] F01K *13/02*

U.S. Cl. 60—646 **11 Claims**

1. A restart temperature maintenance system for a steam turbine system; said steam turbine system comprising a steam turbine, said turbine including a rotating shaft, an outer metal shell means, said restart temperature maintenance system comprising:

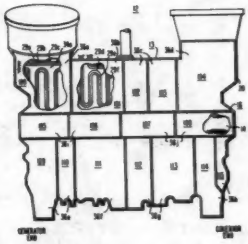
(a) fastener means affixed to the outer surface of said shell means at predetermined positions;

(b) air gap spacer means affixed to the outer surface of said shell means, said air gap spacer means substantially covering said shell means;

(c) a plurality of electric heating blanket means of predetermined size and shape positioned in insulative relationship over said air gap spacer means and said heating blanket means maintained in predetermined position by said fastener means;

(d) heat sensor means affixed to said outer metal shell means of said steam turbine in predetermined position,

(e) power supply means for supplying power to said heating blanket means;



(f) heat sensor monitor and controller means connected in circuit between said power supply means and said heat sensor means, said monitor and controller means for monitoring said heat sensor means and permitting said power supply means when said heat sensor monitor and controller means detects a predetermined low temperature at any of said heat sensor means to supply power to said heating blanket means adjacent said detected low temperature heat sensor means and for disrupting the power from said power supply means when a predetermined high temperature is detected by said sensor monitor and controller means at said detected low temperature heat sensor means, whereby during temporary shutdown of said steam turbine system, said turbine shaft is maintained substantially at a desired initial start-up temperature thereby greatly decreasing the time required for warm-up.

4,584,837

METHOD OF AND APPARATUS FOR DEAERATING CONDENSATE IN POWER GENERATING STEAM TURBINE PLANT

Kenji Sakka; Taiji Inui, both of Hitachi; Ryoichi Okura, Takahagi; Masao Kanazawa, Ibaraki, and Yasushi Takeda, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,247

Claims priority, application Japan, Oct. 13, 1982, 57-178356

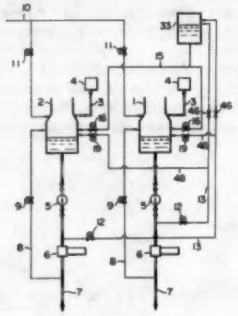
Int. Cl.[4] F01K *13/02*

U.S. Cl. 60—646 **4 Claims**

1. A condensate deaerating method for use in starting a plurality of power generating steam turbine plants, each of said plants having a boiler for generating steam by heating a condensate supplied thereto, a steam turbine connected to a generator and adapted to drive said generator by the expansion of said steam therethrough, and a condenser for condensing the steam expanded through said steam turbine and supplying the condensate to said boiler, the condensate dearation method comprising:

substituting, before starting up the plant to be started, a

condensate in equipment possessing deaerated condensate for the condensate in said condenser of the plant to be started and supplying the substituted condensate to the



boiler to thereby permit a quick start-up of the steam turbine plant, and, wherein said equipment possessing deaerated condensate is the condenser of one of the steam generating plant under operation.

4,584,838

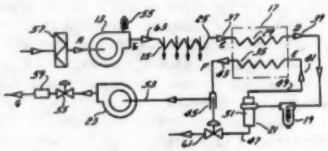
APPARATUS FOR PROVIDING RELATIVELY DRY, OIL FREE COMPRESSED INSTRUMENT AIR

David N. AbuJudom, II, Brookfield, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 10, 1985, Ser. No. 690,315

Int. Cl.[4] F25B 9/02

U.S. Cl. 62—5 **1 Claim**



1. An apparatus for providing relatively dry, compressed instrument air and including:

a first compressor of the oilless type for receiving air at atmospheric temperature and pressure and compressing said air to a first pressure;

a cooler for receiving and cooling said compressed air;

a vortex tube for receiving said cooled, compressed air at the inlet thereof and directing cold fraction discharge air to a second compressor;

a heat exchanger for transferring heat from said cooled, compressed air to said cold fraction discharge air;

a second compressor of the oilless type for receiving and compressing said cold fraction discharge air, thereby providing a supply of instrument air at a pressure in the range of 15-25 p.s.i.g. and having a dewpoint below the freeing temperature of water, said supply of air provided by said second compressor being in substantially the same quantity, in moles of gas, as that quantity received by said first compressor;

said first and second compressors being connected to and driven by a common prime mover, said apparatus being of the open loop type and devoid of a return flow path from said second compressor to said first compressor.

4,584,839

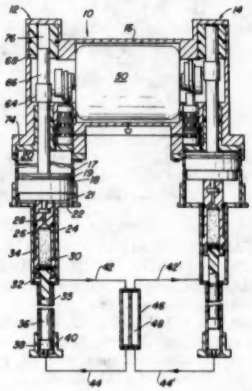
MULTI-STAGE CRYOGENIC REFRIGERATORS

Jack E. Jensen, Columbus, Ohio; Charles B. Hood, Naples, Fla., and Harold C. Parish, Dublin, Ohio, assignors to CVI Incorporated, Hilliard, Ohio

Filed Jul. 2, 1984, Ser. No. 627,123

Int. Cl.[4] F25B 9/00

U.S. Cl. 62—6 **12 Claims**



1. Cryogenic apparatus comprising first and second cryogenic refrigerators each having multiple stages, said first and second refrigerators being arranged in parallel, each stage of said refrigerators including a displacer within a housing, said housing having a warm chamber above said displacer and a cold chamber below said displacer, a regenerator in communication with said warm and cold chambers, said stages of each refrigerator being arranged in series, said displacers of each refrigerator being connected for reciprocal movement together, motor means associated with said refrigerators for reciprocally moving said displacers of said refrigerators in 180° out of phase relation, and the last stage of each refrigerator being coupled to a recuperative heat exchanger, said heat exchanger containing said regenerator of the last stage of each said refrigerator.

4,584,840

COOLING MACHINE OR HEAT PUMP

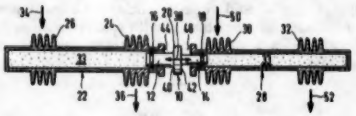
Heinz Baumann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 7, 1984, Ser. No. 618,230

Claims priority, application Switzerland, Jun. 20, 1983, 3355/83

Int. Cl.[4] F25B 9/00; F01B 29/10

U.S. Cl. 62—6 **14 Claims**



1. A cooling machine comprising

a thermoacoustic work system having a first heat exchanger for obtaining heat energy from a first heat source and a second heat exchanger for transferring heat energy to a heat sink; and

at least one thermoacoustic drive system coupled to said work system, said drive system having a third heat exchanger for obtaining heat energy from a second heat

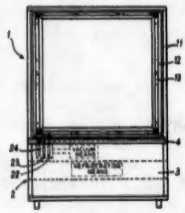
source at a higher temperature than said first heat source and a fourth heat exchanger for transferring heat energy to a heat sink.

4,584,841

ARTIFICIAL HIBERNATOR AND PROCESS FOR COLD PRESERVATION OF A HUMAN BEING OR ANIMAL IN A PREDETERMINED POSITION

Gerard Guillaume, and Lola Guillaume nee Henry, both of 33, 35, rue Rennequin, 75017 Paris, France

Filed Jun. 11, 1984, Ser. No. 619,221
Claims priority, application France, Jun. 30, 1983, 83 10836
Int. Cl.[4] F25D *25/00*
U.S. Cl. 62—62 20 Claims



1. An artificial hibernator for cold preservation of cadavers of human beings and animals, characterized in that it essentially consists of:

an outside multiple wall structure comprising two separate yet integral compartments including an upper fluid-tight compartment and a lower compartment enclosing a freezer unit, at least one of the walls of the structure being transparent;

an internal box having box walls, said box being placed in the upper compartment, serving as a resting place for the being to be frozen and separated from the box walls by thermally insulating means;

a door having a porthole provided with two panes between which a vacuum prevails and comprising a shaped seal able to assure fluid tightness between the door and said outside multiple wall structure;

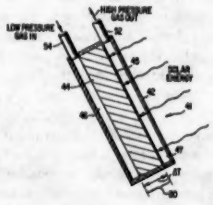
and means in the lower compartment for assuring a partial vacuum at least in the resting place and the porthole.

4,584,842

SOLAR REFRIGERATION

Dimiter I. Tchernev, 9 Woodman Rd., Chestnut Hill, Mass. 02167

Continuation-in-part of Ser. No. 710,609, Aug. 2, 1976, Pat. No. 4,138,850, which is a division of Ser. No. 520,808, Nov. 4, 1974, Pat. No. 4,034,569. This application Feb. 12, 1979, Ser. No. 11,689
Int. Cl.[4] F04B *19/24*
U.S. Cl. 62—106 79 Claims



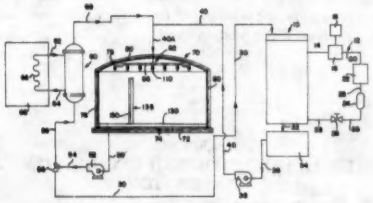
1. In a process for efficiently obtaining usable energy from a low-grade heat source, the use of molecular sieve zeolite in a closed system as a solid adsorbent for sorbing and desorbing polar fluid wherein applying relatively small temperature differences provided from said heat source to said zeolite produces relatively large pressure differences in said fluid when respectively desorbed at a higher temperature and adsorbed at a lower temperature into said zeolite in said closed system, and energy consuming means deriving energy from said fluid pressure differences.

4,584,843

METHOD AND APPARATUS OF STORING ICE SLURRY AND ITS USE FOR COOLING PURPOSES

Oliver M. Pronger, Jr., Blue Island, and Charles M. Heavener, Lisle, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Nov. 5, 1984, Ser. No. 668,408
Int. Cl.[4] B01D *9/04*
U.S. Cl. 62—123 12 Claims



1. A method comprising:

removing aqueous liquid from an ice storage tank and feeding the aqueous liquid through a freeze exchanger in indirect heat exchange with a refrigerant to convert at least part of the aqueous liquid to ice crystals;

feeding an aqueous liquid-ice crystal mixture from the freeze exchanger to a distribution conduit system, located in the upper part of the ice storage tank above the maximum storage capacity of the tank, through which the mixture flows to and through a plurality of horizontally spaced apart outlets to nozzles which disperse the mixture so that it descends uniformly and deposits the ice crystals evenly as a bed of ice of uniform thickness with a substantially horizontal surface; and

removing cold aqueous liquid, which trickles through the ice crystal bed, from the lower part of the tank and feeding it through a heat exchanger in indirect heat exchange with a fluid to be cooled and used for cooling purposes, and then returning the now warm aqueous liquid exiting from the heat exchanger to the ice storage tank to be cooled by downward trickling flowing contact with the ice therein.

4,584,844

HEAT PUMP

Clayton Lemal, Cumberland, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Canada

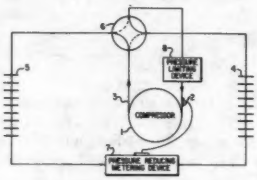
Filed Sep. 4, 1984, Ser. No. 647,189
Claims priority, application Canada, Sep. 20, 1983, 437058
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—160 1 Claim

1. A heat pump system for operating selectively in a heating or cooling mode and including a compressor having an inlet and outlet, an indoor and outdoor heat exchanger, a four-way reversing valve, and a pressure reducing metering device, for use in climates requiring a higher capacity in the heating mode than in the cooling mode,

said system comprising a pressure limited device serially connected to the inlet of the compressor, said pressure limiting device comprising pressure responsive means for

restricting refrigerant flow as pressure increases and shutting off flow at a predetermined pressure to define a maximum pressure limit,

said maximum pressure limit being selected to fall within a predetermined operating pressure range of the system



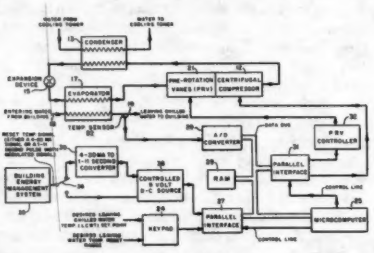
encountered in the heating mode but less that the operating pressures encountered in the cooling mode whereby refrigerant flow, pressure and capacity are reduced for all operation in the cooling mode and whereby the pressure and capacity are unaffected in a lower ambient temperature range of the heating mode.

4,584,845

CONTROL SYSTEM FOR LIQUID CHILLED BY AN EVAPORATOR

John C. Hansen, Spring Grove, and Harold B. Ginder, York, both of Pa., assignors to Borg-Warner Air Conditioning, Inc., York, Pa.

Filed Jul. 1, 1985, Ser. No. 750,205
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—201 **13 Claims**



1. A control system for a refrigeration system having an adjustable capacity compressor, a condenser, and an evaporator through which chilled liquid is circulated, comprising:

sensing means for sensing the temperature of the chilled liquid leaving the evaporator;

regulating means, responsive to the sensed temperature, for regulating the capacity of the compressor as necessary to maintain the leaving chilled liquid at a desired temperature setpoint;

means, responsive to the sensed temperature, for shutting the compressor down whenever the temperature of the leaving chilled liquid drops below the setpoint, by a fixed differential, to a cut-out temperature level;

means for providing a reset temperature signal representing a predetermined increase in the temperature setpoint;

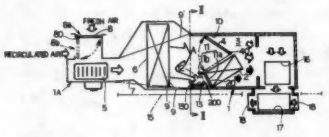
and reset means, responsive to said reset temperature signal, for resetting the setpoint upward to a reset level, while at the same time shifting the cut-out temperature downward to a reset value to avoid a nuisance shutdown of the compressor when the setpoint is reset.

4,584,846

AIR CONDITIONER ASSEMBLY FOR USE IN A VEHICLE

Goro Uchida, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 26, 1985, Ser. No. 705,531
Claims priority, application Japan, May 29, 1984, 59-079016[U]
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—244 **20 Claims**



1. An air conditioner assembly for use in a vehicle comprising:

a housing including a plurality of sections;

at least one air inlet opening which permits air to be introduced into the housing;

at least two air outlet openings which permit air to flow from the housing and into a passenger compartment of the vehicle, a first of said at least two outlet openings functioning to direct air into a lower portion of said passenger compartment, a second of said at least two outlet openings functioning to direct air into an upper portion of said passenger compartment;

an air supplying means for drawing air through said at least one air inlet opening and forcing air upstream and out through said at least two outlet openings;

a heating means for warming air forced therethrough by said air supplying means, said heating means being located within said housing and having an upstream face and a downstream face, an air passage being defined between said heating means and said housing;

a first air damping means located within said air passage, said first air damping means including a hinge and a plate, said plate including a first end and a second end, said hinge being located at one end of the upstream face of said heating means, said hinge being connected to said housing and being connected to said first end of said plate, whereby said plate is pivotally movable between a first position in which said plate is parallel to said upstream face of said heating means and a second position in which said second end of said plate is in contact with said housing, whereby when said plate is in said first position said air forced upstream by said air supplying means is prevented from entering said heating means and is forced to pass through said air passage, and when the plate is in said second position said air forced upstream by said air supply means is prevented from passing through said air passage and is forced to pass through said heating means, and when the plate is positioned at an intermediate position between said first and said second position, a part of the air is introduced into said heating means and a part of the air passes through said air passage; and

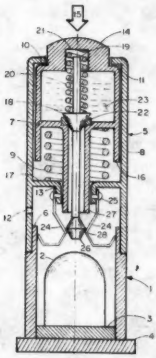
a cool air duct having an inlet opening and being in communication with said second outlet opening, said inlet opening being located in said housing upstream from said upstream face of the heating means, said inlet opening not blocking any portion of said upstream face of the heating means when said plate of said first air damping means is in said first position, whereby air passing through said heating means is ventilated out through said first outlet opening and air passing through said cool air duct is ventilated out through said second outlet opening.

4,584,847

INSTANT COOLING DEVICE FOR COSMETICS

Rita A. Martello, 52 Tomkins Ave., Stony Point, N.Y. 10980, and Endre L. Berecz, 1701 SW. 22 Ave., Ft. Lauderdale, Fla. 33312

Filed Sep. 4, 1984, Ser. No. 647,356
Int. Cl.[4] F25D *3/00*
U.S. Cl. 62—293 11 Claims



1. A miniature cooling device adapted for cooling personal size facial cosmetics comprising

cap assembly means attached to container means, said container means holding facial cosmetics, said cap assembly means having hollow bore therethrough;

pressure vessel means containing liquid refrigerant means, where said pressure vessel means being slidingly received within said bore of said assembly means;

valve means for sealing off said pressure vessel means, comprising a valve, valve seat means, a valve stem connected to said valve and valve stem means positioned around said valve stem;

leaf spring attached to said cap assembly means and conical dog means attached to said valve stem for preventing temporarely the relative motion of said valve stem means when said pressure vessel means is axially moved toward said container means.

4,584,848

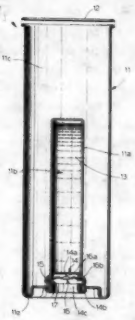
CONTAINER

Eugene R. Barnett, 6268 Windsor Dr., Indianapolis, Ind. 46219

Filed Nov. 3, 1983, Ser. No. 548,328
Int. Cl.[4] F25D *3/10*
U.S. Cl. 62—294 1 Claim

1. A Self-Cooling Container with an outer cappable chamber containing a drink or foodstuff, and an inner cappable chamber containing a pressurized coolant being formed or drawn from a material allowing continuous walls and bottoms of the outer chamber and of the inner chamber; the inner chamber being provided with thicker walls and bottom than the outer chamber;

the inner chamber being provided with a raised rim to recieve a cap; the outer chamber being of a greater diameter and the rim being extended farther outwardly than the inner chamber rim, to protect the inner chamber rim; a cap of commercial can type, capping the outer chamber; a cap provided with a lip and a sidewall to be recieved interiorly in the open area of the inner chamber; the lip having a sealant applied under the lip to be pulled downwardly upon the rim of the opening of the inner chamber and a sealant applied to the sidewalls of the cap in the area where the cap walls are expanded against the inner walls of the inner chamber, providing a double seal of the inner chamber; the inner chamber cap being scored exteriorly in a (V) form with the point of the (V) scored deeper and being centered in the center of the inner chamber cap, to provide a Safety Release of excessive pressure and to allow Intended Venting of the pressurized coolant to cause Cooling of the inner and outer chamber by evaporation; a spring carrying a centrally located lance of the proper size being placed interiorly in the exterior area of the inner chamber cap; this spring lance being retained in the inner chamber cap by force of spring urging on spring



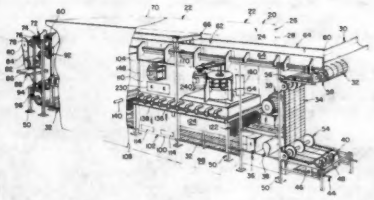
ends against cap walls; the depressing of the spring center area forces lance part of spring to move downwardly piercing the inner chamber cap at the point of the scored safety valve (V); when spring lance is released, spring force will retract lance; opening a hole of the Proper size into the inner chamber coolant area thereby releasing pressurized coolant to evaporate and cool inner and outer chambers and the material (drink or foodstuff) contained in the outer chamber; the spring body covers the opening made by the spring lance and will deflect all coolant released from inner chamber, giving a Safety shield effect.

4,584,849

FOOD FREEZING TUNNEL

Westley R. Cloudy; Robert E. Britton, both of Edmonds, and Anthony D. Snodgrass, Everett, all of Wash., assignors to Cloudy & Britton, Inc., Mountlake Terrace, Wash.

Filed Jan. 17, 1985, Ser. No. 692,291
Int. Cl.[4] F25D *25/04*
U.S. Cl. 62—380 13 Claims



1. An improved food freezing building structure and inside food freezing tunnel utilized to freeze unpackaged individual food portions occupying a limited floor area in utilizing efficiently a uniform flow of freezing air moved by an unhoused centrifugal fan wheel mounted with its axis vertically positioned within the freezing tunnel and located above the freezing coils and located below a porous conveyor on which the individual food portions are traveling, and with the freezing

coils being protected from dropping food portions by a bottom of the unhoused centrifugal fan, comprising:

(a) a food freezing building structure having respective interior walls;

(b) a food freezing tunnel mounted within the food freezing building structure creating return downwardly flowing air passageways between the respective interior walls of the food freezing building structure and the food freezing tunnel;

(c) a lower inlet air chamber in the bottom of the food freezing tunnel to receive and to turn the returning air;

(d) a freezing coil chamber and freezing coils mounted therein positioned above and in-line with the lower inlet air chamber within the freezing tunnel to receive, drop the temperature and dry the circulating air, creating a uniform freezing airflow passing upwardly to an intake of an unhoused centrifugal fan, with this freezing airflow being dry enough so there is no frost and ice buildup on this fan or in a chamber of the fan;

(e) a defrost chamber mounted above and in-line with the freezing coil chamber having hot water spray system which, during defrosting of the freezing coils heats both this defrost chamber and the freezing coil chamber to remove the ice and frost from the freezing coils and the defrost chamber;

(f) a fan chamber in the food freezing tunnel to receive the returning upwardly flowing freezing air from the defrost chamber and the freezing coil chamber, being positioned above and in-line with the freezing coil chamber;

(g) an unhoused centrifugal fan wheel mounted centrally in the fan chamber with its axis vertically positioned and having a bottom intake to receive the upwardly flowing freezing air from the defrost chamber and the freezing coil chamber and to discharge the freezing air in a horizontal direction in the fan chamber;

(h) a bottom of the fan chamber surrounding the bottom intake of the unhoused centrifugal fan wheel serving to guide the freezing air leaving the defrost chamber and the freezing coil chamber into this bottom intake of the unhoused centrifugal fan wheel, and also serving to collect and to divert any food portions, so no food portions will ever enter the freezing coil chamber during the operation of the freezing tunnel;

(i) complete side walls of the fan chamber which with the bottom of the fan chamber redirect upwardly the freezing air leaving the unhoused centrifugal fan wheel, and which with the bottom of the fan chamber serve to reduce the noise level of the operating centrifugal fan wheel, and which with the bottom of the fan chamber serve to keep the operating centrifugal fan wheel from causing personnel injuries;

(j) a fan motor supported on the side walls of the fan chamber outside of the fan chamber;

(k) a drive belt system mounted on and between the fan motor and the unhoused centrifugal fan wheel;

(l) radially spaced vertical baffles mounted on the bottom of the fan chamber around the unhoused centrifugal fan wheel, which eliminate any possible continuing tangential flow component of the radially and horizontally discharging freezing air to thereby eliminate any swirling or vortexing of this freezing air which is pressurizing the fan chamber;

(m) a top of the fan chamber having pull out perforated plates which help in the pressurization of the fan chamber and in distributing the upwardly flowing freezing air, and in collecting food portions;

(n) a porous conveyor belt chamber positioned above and in-line with the fan chamber to first direct the upwardly flowing freezing air through a moving porous conveyor, and then to exit this freezing air flow for its return downwardly in the downwardly flowing air passageways between the respective interior walls of the food freezing building structure and the food freezing tunnel;

(o) a porous conveyor belt and driving assembly of the freezing tunnel, having a top run of the porous conveyor belt moving in the porous conveyor belt chamber and receiving food portions and carrying them over the top of the fan chamber, so the freezing air moving uniformly upwardly through the perforated plates will pass by and around the individual food portions to effectively freeze them, and having a bottom run of the porous conveyor belt moving below the lower inlet air chamber; and

(p) small air flow control doors having operating mechanisms located in the fan chamber just above the bottom of the fan chamber, which when opened direct freezing airflow out of the freezing tunnel thereby reducing the upwardly flowing freezing airflow through the porous conveyor belt moving the food portions, without changing the static pressure directly under the porous conveyor belt and without interfering with the perfect fluidization of the food portions during their freezing while traveling on the porous conveyor belt.

4,584,850

FLAT-BED KNITTING MACHINE

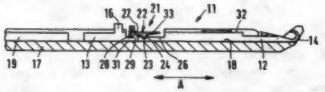
Hans-Günter Haltenhof, Pfullingen, Fed. Rep. of Germany, assignor to H. Stoll GmbH & Co., Fed. Rep. of Germany

Filed Feb. 19, 1985, Ser. No. 702,720

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1984, 3407965

Int. Cl.[4] D04B *7/00*

U.S. Cl. 66—75.1 **22 Claims**



1. A knitting machine, in particular a flat-bed knitting machine, comprising:

a plurality of needle beds in each of which longitudinally extending needle tricks are formed;

a cam box carriage operatively associated with the needle beds;

a knitting needle disposed in each needle trick of each needle bed to move longitudinally in its respective needle trick, each knitting needle comprising two parts, with one part including a needle head and the other part including a needle butt, the needle head defining a stitch forming part and the needle butt defining a movement-initiating part;

a coupling device for each knitting needle for coupling the two parts of the knitting needle; and

a coupling operating device provided on the cam box carriage for engaging and thereby operating the coupling devices to couple and uncouple the stitch forming part of each needle with respect to its movement-initiating part.

4,584,851

KNITTING MACHINE FOR PRODUCING MESH PRODUCTS

Ernst-Dieter Plath, Albstadt, Fed. Rep. of Germany, assignor to Sipra Patententwicklungs-und Beteiligungsgesellschaft, Albstadt, Fed. Rep. of Germany

Filed Mar. 26, 1984, Ser. No. 594,771

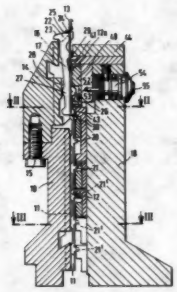
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311361

Int. Cl.[4] D04B *15/06, 15/14*

U.S. Cl. 66—104 **5 Claims**

1. A knitting machine for producing mesh products, comprising a needle carrier provided with guide webs; a plurality of needles longitudinally displaceably supported between said guide webs of said needle carrier; a plate carrier fixedly connected with said needle carrier and having guide webs; a plurality of turnable plate members formed shorter than said

needles and supported between said guide webs of said plate carrier, said guide webs of said plate carrier having free end surfaces on which said needle shafts of said needles slide, said guide webs of said plate carrier being arranged alternately to said guide webs of said needle carrier, said plate members being guided solely by said plate carrier; and control means



provided with control curves for said needles and said plate members, said control curves being formed so that a withdrawal movement of one needle ends at least one half of needle pitch before the end of an opposite driving out movement of a plate member preceding that needle in a circumferential direction.

4,584,852

COMPOUND NEEDLE FOR A KNITTING MACHINE

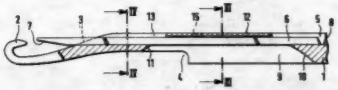
Ernst Beck, Bitz; Alfred Durst; Heinz Merk, both of Albstadt; Schuler Bernhard, Sonnenbühl; Kurt Wiedenhöfer, and Werner Wohlgemuth, both of Albstadt, all of Fed. Rep. of Germany, assignors to Theodor Groz & Sohne and Ernst Beckert Nadelfabrik Commandit-Gesellschaft, both of Albstadt-Ebingen, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,079

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325767

Int. Cl.[4] D04B *35/02*

U.S. Cl. 66—120 **20 Claims**



1. Compound needle for a knitting machine comprising

a needle shank **(1)** which, in cross section, is essentially rectangular, the needle shank **(1)** being formed with a groove or slot **(5)** of essentially U-shaped cross section;

a slider closing element **(6)** located in the groove or slot having a size and cross section to fit within the groove or slot and longitudinally slidable therein;

a slit-shaped opening **(9)** extending at least in part parallel to the groove or slot **(5)** and in communication therewith to permit escape and removal of fluff or other contaminants from the groove or slot being formed in the shank; and

a guide rib **(12)** aligned, at least in part, with the slit-shaped opening **(9)** and at least partly overlapping the groove or slot **(5)**, extending in longitudinal direction along the needle and, at least in part, over the slider closing element **(6)** to provide guidance for the slider in the groove or slot in the region of the slit-shaped opening **(9)**, provide for stiffness of the needle in the region of the slit-shaped opening, and resistance against bending thereof when the needle is in use.

4,584,853

TRICOT KNITTING MACHINE, PARTICULARLY GALLOON CROCHETING MACHINE

Claiis Lüeger, Gipf-Oberfrick, Switzerland, assignor to Textilma AG, Hergiswil, Switzerland

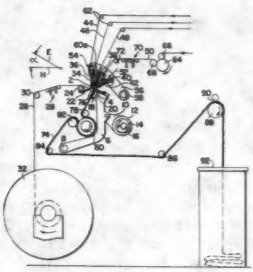
PCT No. PCT/CH84/00159, § 371 Date Jun. 4, 1985, § 102(e) Date Jun. 4, 1985, PCT Pub. No. WO85/01757, PCT Pub. Date Apr. 25, 1985

PCT Filed Sep. 27, 1984, Ser. No. 744,067

Claims priority, application Switzerland, Oct. 7, 1983, 5479/83

Int. Cl.[4] D04B *23/00*

U.S. Cl. 66—203 **4 Claims**



1. A knitting machine, in particular, a galloon crocheting machine with a series of knitting needles movable together forwardly and rearwardly by means of a rearwardly located needle bar, a corresponding series of setting needles movable in common transverse to the knitting needles, and arranged on a forwardly located needle bar whereby warp threads are guidable by the setting needles from a knitting beam at the forward side of the machine frame, and further, thread guides mounted on movable bars and arranged above the knitting needles, characterized in that the plane (E) of the knitting needles is inclined downwardly and rearwardly at an angle α lying 20°–40° to the horizontal (H), the setting needles **(22)** being mounted at the lower side of the bar **(24)** and extending upwardly relative to the knitting needles **(2)**, the warp threads **(26)** being guided over the bar **(24)**, and the upper side of the bar **(24)** lying at a higher elevation than the tip of the knitting needles **(2)** in a forward position, and further, the bars **(54)** holding the thread guides being guided at both sides of the machine frame in bearings **(60,60*a*)** which are positioned on pivotal arms **(56)** extending rearwardly and downwardly, whereby the frontmost bearing **(60*a*)** of the pivot arm **(56)** in its raised position of the pivot arm lies at least close to the uppermost point relative to the other bearings.

4,584,854

AIR COMB ARRANGEMENT FOR JET DYEING MACHINE

Herbert R. King, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

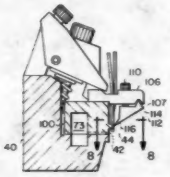
Filed Oct. 9, 1984, Ser. No. 658,741

Int. Cl.[4] D06B *1/02*

U.S. Cl. 68—205 R **5 Claims**

4. Apparatus for applying fluids to moving material comprising: means for conveying the material in a pre-determined path of travel, liquid application means mounted above the path of travel of the material having a row of outlets positioned each having a discharge axis to discharge a corresponding row of generally parallel streams downwardly toward the path of travel of the material, manifold means supplying fluid under pressure to said row of outlets, means to supply fluid to said manifold means, fluid deflecting means having discharge axes positioned on one side of said row of outlets so that discharge

axes of said fluid deflecting means intersect the discharge axes of the outlets for selectively deflecting the streams of liquid from said outlets away from the path of travel of the material, and a liquid collection chamber positioned on the other side of the discharge axes of the row of outlets from said deflecting means, said liquid collection chamber having an opening extending along the row of outlets for receiving the deflected liquid streams to prevent their contact with the moving mate-



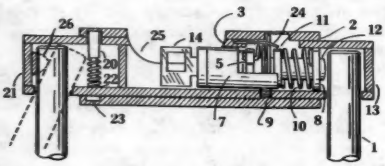
rial, said liquid application means including grooves formed therein above said row of outlets and extending substantially perpendicular to the centerline of said outlets, said fluid deflecting means including an air tube holder, a plurality of air tubes in said holder means to apply a pressure to said air tubes to force said air tubes into said grooves and maintain said air tubes in said grooves and a means to adjust the pressure exerted by the means to apply pressure to said air tubes.

4,584,855

PICK-PROOF LOCKING SYSTEM

Glen Burlingame, 2858 W. 55th St., Chicago, Ill. 60632

Filed Jun. 29, 1983, Ser. No. 508,740
Int. Cl.[4] E05B *67/04*
U.S. Cl. 70—38 A **5 Claims**



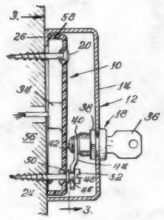
1. A pick-proof lock assembly comprising:
a shackle having two legs;
a tubular collar having a central aperture;
a tubular housing having a central access aperture therein and further having lateral apertures for receiving the legs of said shackle;
said collar being rotatably mounted around said housing between a first position preventing access to said housing aperture and a second position wherein said collar aperture and said housing aperture are aligned;
a key;
a support means mounted in the housing;
a lock cylinder mounted on the support means, said lock cylinder having a first end including a key slot and a second end including an axial extension, said first end being accessible only through said housing access aperture;
a latch pin supported by said lock cylinder;
a shackle lock pin mechanically connected to said latch pin, said shackle lock pin being received in one leg of said shackle in a locked position and being retracted from said shackle in the unlocked position;
a spring biased retainer latch associated with the second end of said lock cylinder, pivoted in the housing and adapted to secure said shackle lock pin in locked position, while forcing said lock cylinder to rotate and be held in an extreme limit of rotation opposite the direction necessary to open the lock;
whereby upon insertion of said key into said key slot and upon rotational movement of said collar from said second position to said first position, said shackle lock pin moves from said locked position to said unlocked position, freeing said shackle for removal from said housing.

4,584,856

SECURITY COVER

George D. Petersdorff, 162 S. Greeley, Palatine, Ill. 60067; Keith J. Neilson, 1908 Capri Dr., Palatine, Ill. 60074, and Jimmie L. Curls, 210 W. Willow Rd., Prospect Heights, Ill. 60070

Filed Jan. 11, 1984, Ser. No. 569,920
Int. Cl.[4] E05B *65/00*
U.S. Cl. 70—57 **5 Claims**



1. A security cover in combination with and shaped for protecting a surface mounted apparatus, comprising:
a. a surface mounted apparatus having a defined peripheral configuration,
b. a removable protective cover with peripheral sides shaped to closely fit around said apparatus and fit flush against a surface on which said apparatus is mounted;
c. first fastening means for securing said apparatus to said surface;
d. at least one tab integral with said protective cover and engaging said apparatus; said tab being disposed inwardly and orthogonal to a side of said protective cover, said tab being wedgeable between said surface upon which said apparatus is mounted and said apparatus;
e. second fastening means for securing said apparatus to said surface; and
f. a key lock mounted on said protective cover and movably engageable with said second fastening means.

4,584,857

DEVICE FOR BLOCKING THE ROTARY MOVEMENT OF A STEERING COLUMN

Günter Weber, Wuppertal, Fed. Rep. of Germany, assignor to Neiman S.A., Courbevoie, France

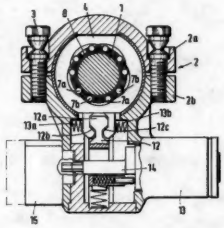
PCT No. PCT/EP83/00039, § 371 Date Nov. 9, 1983, § 102(e) Date Nov. 9, 1983, PCT Pub. No. WO83/03082, PCT Pub. Date Sep. 15, 1983
PCT Filed Feb. 18, 1983, Ser. No. 555,879
Int. Cl.[4] B60R *25/02*
U.S. Cl. 70—184 **13 Claims**

1. A device for blocking the rotary movement of a steering column of a motor vehicle in the two directions of rotation of the steering column, comprising:
(a) first and second cages coaxial with the steering column and rotatably shiftable in opposite senses about the axis of the steering column, said cages having respective sets of first and second roller-supporting members,
(b) a bush concentric with said cages and the steering column and fixed to the latter, said bush on the one hand and the steering column on the other hand having mutually confronting circumferential surfaces spaced from one

another and constituting the opposed boundaries of an annular race, and

(c) first and second sets of rollers of identical diameters rotatably carried by the respective sets of said roller-supporting members of said first and second cages and arranged in said annular race with the axes of said rollers parallel to each other and to the steering column axis,

(d) one of said confronting surfaces being cylindrical and defining a smooth running track for said rollers, and the other of said confronting surfaces having respective circumferentially spaced first portions the radial spacing of which from said one surface is greater than the roller diameter, and said other surface further having, at the opposite end regions of each of said first portions thereof, respective second and third portions oppositely inclined toward said one surface to a radial spacing therefrom which is less than the roller diameter, said second and



third portions of said outer surface thereby defining respective clamping surfaces for said first and second sets of rollers,

(e) said first and second cages, when rotationally shifted to respective first positions, disposing said roller-supporting members in sections of said race where the radial spacing between said one surface and said first portion of said other surface is greater than the roller diameter to enable said rollers to rotate freely and leave the steering column unblocked, and said first and second cages, when rotationally shifted to respective second positions, disposing said first and second sets of roller-supporting members in respective sections of said race where the radial spacing between said one surface and each of said second and third portions of said outer surface is less than the roller diameter to cause said rollers to be frictionally clamped by said second and third portions of said other surface against said one surface and immobilized to block the steering column.

4,584,858

DEVICE FOR FORMING A BUNCH OF KEYS

Heinz Wolter, Meiswinkel 3, 5067 Kürten, Fed. Rep. of Germany

Filed Jul. 18, 1983, Ser. No. 514,478

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226837

Int. Cl.[4] A44B *15/00;* **A45C** *11/32;* **A47G** *29/10*

U.S. Cl. 70—456 R **23 Claims**

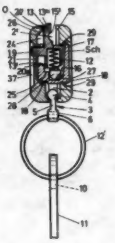
1. In a device for forming a bunch of keys, having a centrally arranged disc, with individual key holder members adapted to extend from said disc, the key holder members each comprising an arm with a head, the heads being slidably mounted in an undercut groove in said disc, said groove opening towards the periphery of said disc,

said groove has a removal opening constituting means through which said heads can be removed from and placed, respectively, into said groove in said disc, the improvement wherein

said removal opening is formed as an enlarged, radially outwardly directed cross-section of said groove,

a slide means for releasably closing said removal opening by reducing said cross-section to less than a cross-section of said heads, so as to prevent said heads from passing through said removal opening,

said slide means is cooperatively formed with said groove so as to leave open a passage cross-section for passage of said heads with said arms,



said passage cross-section for passage of said heads with said arms is formed when said slide means closes said removal opening.

4,584,859

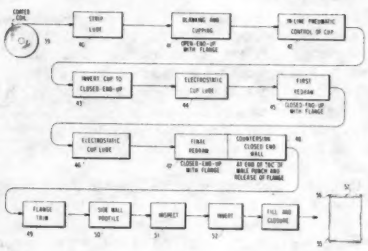
IN-LINE CONTROL DURING DRAW-REDRAW OF ONE-PIECE SHEET METAL CAN BODIES

William T. Saunders, Weirton, W. Va., assignor to Weirton Steel Corporation, Weirton, W. Va.

Filed Aug. 23, 1985, Ser. No. 768,708

Int. Cl.[4] B21D *22/00*

U.S. Cl. 72—43 **6 Claims**



1. Method for making one-piece can bodies utilizing draw-redraw forming of flat-rolled sheet metal while maintaining control of orientation and movement of cup-shaped work product throughout a can-making line, comprising in combination the steps of

providing continuous-length flat-rolled sheet metal of predetermined thickness gage coated on both its planar surfaces with an organic coating, such organic coating surfaces being coated with draw-lubricant;

establishing a horizontally oriented sheet metal travel path for longitudinal movement of such flat-rolled sheet metal in the direction of its continuous length into and out of a blanking and cupping station;

feeding such sheet metal in substantially planar form in the direction of its continuous length by providing for cyclic longitudinal movement of such sheet metal through such blanking and cupping station for repetitious blanking and cupping operations during cyclic interruptions in longitudinal movement of continuous-length sheet metal along such sheet metal travel path;

carrying out a blanking and cupping operation which includes: cutting a circular blank of predetermined diameter from sheet metal, then

draw forming such cut blank into a cup-shaped work product

having its open end oriented upwardly by relative movement from opposite planar surfaces of such cut blank of a draw punch with respect to a draw die defining a draw cavity into which such sheet metal is drawn,

such drawn work product having a closed end wall, a cylindrical configuration unitary side wall extending toward its remaining opposite open end of such drawn cup and a compound curvilinear transition zone joining such closed end wall and cylindrical side wall,

such cylindrical side wall being symmetrically spaced from the drawn work product central longitudinal axis which is perpendicular to the geometric center of such planar end wall,

controlling relative movement between such draw punch and draw die so as to provide unitary flange metal extending radially outwardly with respect to such central longitudinal axis around the periphery of such open end of the drawn work product,

such flange metal lying in a plane which is substantially normal to the central longitudinal axis of the drawn work product, and

disposing such drawn work product for movement from such blanking and cupping station with its closed end wall in such sheet metal travel path; then

pneumatically moving such drawn work product while separating the travel path of the scrap sheet metal from which a blank has been cut from the travel path of the drawn work product to direct such work product onto a work product can line for controlled movement toward a redraw station,

electrostatically lubricating interior and exterior surfaces of the drawn work product before redrawing while such work product is being controllably moved along such work product can line; and thereafter

carrying out a redraw operation on such lubricated cup-shaped work product to decrease the diameter of its closed end wall and increase the height of its unitary side wall to form a redrawn cup,

such redrawing operation being carried out while such work product is oriented closed-end up utilizing simultaneous movement in opposite directions along such central longitudinal axis of a redraw punch and a redraw die defining a redraw cavity into which such work product is redrawn,

controlling movement of such redraw punch and redraw die along such central longitudinal axis during such redrawing operation to present flange metal at the open end of such redrawn cup,

such flange metal extending radially outwardly at the open end of such redrawn cup in a plane which is normal to the central longitudinal axis of such redrawn cup,

such flange metal at the open end of such redrawn cup being disposed in such work product line at completion of such redraw operation; and

moving such redrawn cup from such redraw station closed-end up with such redrawn flange metal disposed in such work product can line.

4,584,860

TOOLING SYSTEM FOR SUPERPLASTIC FORMING OF METALS

Kirke Leonard, Redondo Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 17, 1985, Ser. No. 745,768
Int. Cl.[4] B21D *22/20*
U.S. Cl. 72—61 **20 Claims**

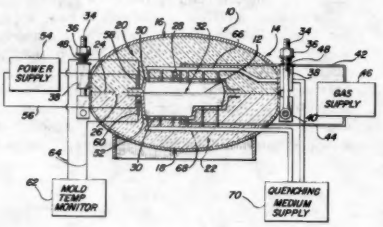
1. A tooling system for superplastic forming of a workpiece, comprising:

a shell, said shell comprising an upper subshell and a lower subshell;

an upper die member disposed within said upper subshell, said upper die member composed of liquid hardenable material;

a lower die member disposed within said lower subshell, said lower member composed of liquid hardenable material, said upper member having a surface exposed from said upper subshell and said lower member having a surface exposed from said lower subshell, said upper member surface and said lower member surface defining a die cavity when said upper member and said lower member are joined together;

means for releasably securing said upper subshell and said lower subshell together; p1 means for heating the die cavity;



a source of pressurized gas;

a gas conduit, said gas conduit connecting said source of gas to the cavity for providing pressurized gas to the workpiece in the cavity in order to superplastically form the workpiece;

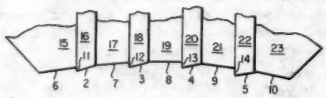
a resiliant venting means associated with said securing means for relieving excessive gas pressure within the cavity.

4,584,861

KNURLING TOOL

Benjamin M. Bartilson, Columbus; Richard D. Kreachbaum, Westerville; Thomas A. Pettenski, Columbus, and John T. Voedisch, Worthington, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Jul. 3, 1984, Ser. No. 627,370
Int. Cl.[4] B21H *1/20, 7/14, 7/18*
U.S. Cl. 72—214 **1 Claim**



1. A knurling tool for impressing uniform serrations across the surface of a metal flake producing drum parallel to the axis of rotation, wherein each serration consists of a radial surface, and an angular surface inclined at an acute angle θ to the tangent of curvature of the drum, said knurling tool comprising:

a multiplicity n of forming discs, each forming disc having an angular surface around the perimeter of the disc forming an acute angle with one surface of the forming disc;

at least n+1 spacer discs abutting on opposite sides of and alternating between the forming discs forming an alternating array, each spacer disc having a circumferential periphery tangential to the drum surface;

an axial member for accepting and retaining the discs;

journaling means for providing free rotation to said knurling tool; and

each said forming disc having one circumferential edge defining a circle of diameter substantially similar to the diameter of the abutting spacer disc and one circumferential edge of said forming disc defining a circle of larger diameter than the diameter of the abutting spacer disc on that opposite side, the larger of the circumferential edges of each of the forming discs together in said alternating

array defining a contour substantially appoaching that of a hyperboloid.

4,584,862

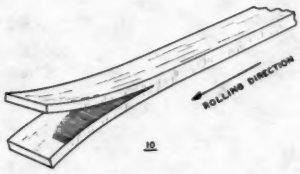
ROLLING PROCEDURES FOR ELIMINATING ALLIGATOR DEFECT FORMATION

William L. Otto, Jr., Allegheny Township, Westmoreland County, and Howard A. Kuhn, Richland Township, Allegheny County, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 532,848, Sep. 16, 1983, abandoned. This application Jul. 19, 1984, Ser. No. 632,406

Int. Cl.[4] B21B *1/06*

U.S. Cl. 72—226 **2 Claims**



1. A method of reducing the thickness of a slab of metal in which alligatoring defects tend to occur, the method comprising the steps of:

determining an amount of reduction in thickness and a thickness value that tend to produce a longitudinal fracture in one or both ends of the slab,

directing a relatively thick slab of metal through one or more rolling mills to incrementally reduce the thickness of the slab until its thickness approaches said thickness value that tends to produce a longitudinal fracture in one or both ends of the slab,

continuing to reduce the thickness of the slab by passing the same through the mill or mills, with each pass of the slab taking a decreasing amount of reduction in thickness,

discontinuing the step of taking a decreasing amount of reduction in thickness, while the thickness of the slab is still greater than said thickness value that tends to produce a longitudinal fracture, and

passing the slab again through the mill or mills to reduce the thickness thereof below said thickness value that tends to produce a longitudinal fracture, the amount of reduction in this pass being substantially greater than the last pass of the slab through the mill in said step of taking a decreasing amount of reduction in thickness preceding this step.

4,584,863

AUTOMOBILE BODY REPAIR TOOL

Claire F. Gaston, Des Moines, Iowa; George L. Steck, Dayton, Ohio; Raymond E. Steck, Miamisburg, Ohio, and Laurence D. Steck, Dayton, Ohio, assignors to Steck Manufacturing Company, Inc., Dayton, Ohio

Filed Jun. 6, 1985, Ser. No. 742,038

Int. Cl.[4] B21D *1/12*

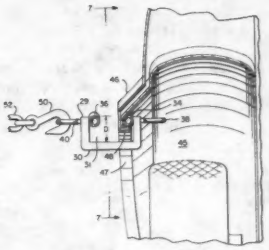
U.S. Cl. 72—477 **15 Claims**

1. An automobile body repair tool comprising:

support means having two aligned, spaced apart, generally "U" shaped members, each having two arms and a connecting portion defining bight portions for receiving the edge of a work piece;

work engaging means spanning said generally "U" shaped members and attached to one arm of each of said generally "U" shaped members on one side of said bight portions, said support means for engaging one side of the work piece in said bight portions; and

lateral force transmitting means attached to said support means for transmitting lateral force to said work engaging



means thereby applying force along said one side of the work piece in said bight portions.

4,584,864

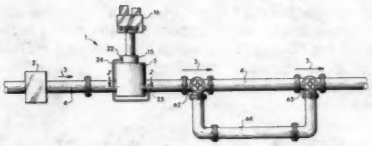
METHOD AND APPARATUS FOR PROVING AND FACTORING A METER STACK

Harry B. Neeff, 1530 "C" St., Casper, Wyo. 82602

Filed May 18, 1984, Ser. No. 611,847

Int. Cl.[4] G01F *25/00*

U.S. Cl. 73—3 **18 Claims**



1. A method for proving and factoring a meter stack on a flow pipe, said stack including a meter with a metering element positioned within said flow pipe for rotation about a first axis in response to fluid flow through said flow pipe, a compensator, and a counter; said compensator being operably coupled to said metering element through a first drive means including a first plurality of gears; said counter having in series a second plurality of gears, a final counter shaft mounted for rotation about a second axis, and a digital read out means run off of said final counter shaft; and, said final counter shaft being operably coupled to said compensator through a second drive means including said second plurality of gears of said counter, said method including the steps of:

(a) causing said metering element to rotate about said first axis by flowing a known volume of fluid through said meter, said metering element rotation causing operation of said compensator through said first drive means including said first plurality of gears, said compensator in turn causing rotation about said second axis of said final counter shaft through said second drive means including said second plurality of gears, and said final counter shaft in turn causing operation of said digital read out means, and

(b) measuring the amount of angular rotation of said final counter shaft about said second axis while said known volume of fluid flows through said meter, said measuring being on an order of magnitude of at least 100 times smaller than the smallest incremental read out of the digital read out means wherein by comparing the measured amount of angular rotation of said final counter shaft against a predetermined amount representing a true reading of the known volume, the meter stack from the meter through the final counter shaft can be proven and an adjustment factor for the meter stack determined to com-

pensate for any inaccuracies in the drive couplings from the meter through the final counter shaft.

4,584,865

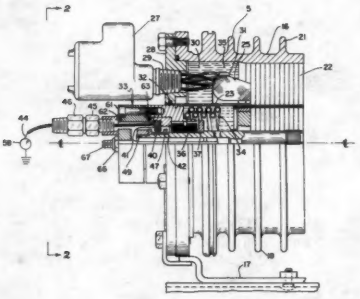
DEVICE AND METHOD FOR TESTING FOR MOTOR BEARING WEAR

Clement Hutchins, Moultonboro, N.H., assignor to Lawrence Pump and Engine Company, Lawrence, Mass.

Filed Jul. 30, 1984, Ser. No. 635,901

Int. Cl.[4] G01N *3/56*

U.S. Cl. 73—7 **11 Claims**



1. In a motor having a stator, means for supporting conductive bearings fixed with respect to the stator, and a rotor supported by the bearings for rotation about an axis, a device for testing for bearing wear comprising:

a conductive ring element fixed with respect to the stator and co-axial with the rotor axis;

a conductive rotary ring element co-axial with and attached to and supported for rotation with the rotor;

one of the ring elements having an internal surface and the other ring element having an external surface, the internal and external surfaces facing each other closely, one of said facing surfaces being coated with a resistive coating; and

means for dynamically measuring the resistance between the ring elements through the resistive coating, said means being connected between the fixed element through an electrical path including the bearings to the rotary element;

whereby wear of the bearings causes wear of the coating and the resistance measuring means dynamically indicates a decreased resistance between the rings through the coating as a measure of the degree of bearing wear.

4,584,866

METHOD AND APPARATUS FOR THE DETERMINATION OF NON-DISSOLVED GAS IN LIQUIDS

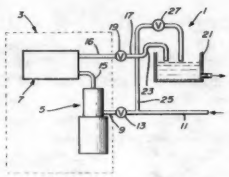
Wladmir Janssen, Montreal, Canada, assignor to Domtar, Inc., Montreal, Canada

Filed Nov. 26, 1984, Ser. No. 675,002

Int. Cl.[4] G01N *7/14*

U.S. Cl. 73—19 **18 Claims**

1. A method for use in determining the amount of non-dissolved free gas in a liquid sample, comprising the steps of: (a) filling a closed expandable space defining a first volume with a sample of the liquid, measuring the density of the liquid sample in the closed space a first time, and (b) while holding the liquid in said closed expandable space, reducing the pressure of the liquid sample to a predetermined reduced pressure and thereby enlarging said closed expandable space to a second immediate larger volume to expand the non-dissolved free gas in said liquid sample, the amount of said non-dissolved free gas determining the size of said second immediate volume, while maintaining dissolved gas in solution, and determining the density of said second immediate larger volume, the function density versus time, under said immediate larger volume, being substantially a straight line reflecting the non-dissolved free gas expansion in the liquid.



4,584,867

DEVICE FOR SELECTIVELY DETERMINING THE COMPONENTS OF GAS MIXTURES BY MEANS OF A GAS SENSOR

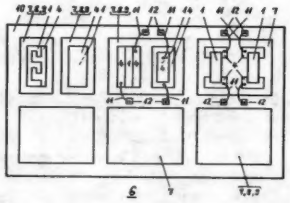
Martin Forster, Jona, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Filed Aug. 3, 1984, Ser. No. 640,125

Claims priority, application Switzerland, Aug. 30, 1983, 4736/83

Int. Cl.[4] G01N *27/12*

U.S. Cl. 73—23 **31 Claims**



1. A device for selectively determining components of gas mixtures by means of a gas sensor, said device comprising:

a predetermined number of sensor elements which change their properties under the action of the to-be-determined components of a gas mixture to be investigated;

a heat resistant and thermally insulating substrate;

said predetermined number of sensor elements being mounted at said heat resistant and thermally insulating substrate and thereby are thermally insulated from each other and can be heated to related operating temperatures independent of each other;

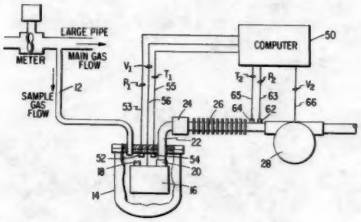
said sensor elements being selected and operated such as to permit the determination of different ones of the components of said gas mixture; and

an evaluation circuit arrangement operatively connected to said sensor elements in order to detect and evaluate the changes in the properties of said sensor elements under the action of the to-be-determined components of the gas mixture.

4,584,868
APPARATUS FOR DETERMINING THE SUPERCOMPRESSIBILITY FACTOR OF A FLOWING GAS

Robert S. Jacobsen, Hatboro, and George W. Schneider, Jr., Huntingdon Valley, both of Pa., assignors to American Meter Company, Philadelphia, Pa.

Filed May 16, 1985, Ser. No. 734,935
Int. Cl.[4] G01N 7/00; G01F 1/00
U.S. Cl. 73—23 **4 Claims**



1. An arrangement for continuously determining the supercompressibility factor (Z_1) of a gas at an elevated pressure (P_1), comprising:

means for dropping the pressure of said gas to a lower pressure (P_2) at which the supercompressibility factor (Z_2) of said gas is known;

means for measuring the volume (V_1) of said gas at said elevated pressure;

means for measuring the temperature (T_1) of said gas at said elevated pressure;

means for measuring said elevated pressure (P_1);

means for measuring the volume (V_2) of said gas at said lower pressure;

means for measuring the temperature (T_2) of said gas at said lower pressure;

means for measuring said lower pressure (P_2); and

means for calculating said elevated pressure supercompressibility factor using the formula

$$Z_1 = \frac{V_1}{V_2} \times \frac{P_1}{P_2} \times \frac{T_2}{T_1} \times Z_2.$$

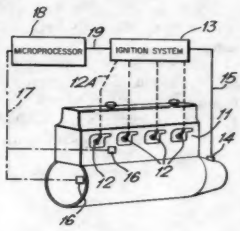
4,584,869
METHOD AND APPARATUS FOR DETECTING KNOCK IN A SPARK IGNITION ENGINE

John S. Frodsham, Leamington Spa, England, assignor to BL Technology Limited, London, England

Filed Aug. 12, 1983, Ser. No. 522,673
Claims priority, application United Kingdom, Aug. 12, 1982, 8223227
Int. Cl.[4] G01L 23/22
U.S. Cl. 73—35 **14 Claims**

6. A method of detecting knock in a spark ignition internal combustion engine, said method comprising sensing the vibration of the engine or pressure in a cylinder by means of a sensor, and obtaining the auto-correlation function of a signal derived from the sensor, the auto-correlation function being the average of the instantaneous product of the signal and the signal delayed by a time lag as a function of time lag, to detect the presence of knock.

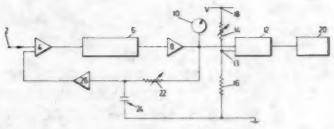
8. A method of detecting knock in a spark ignition internal combustion engine, said method comprising sensing the vibration of the engine or pressure in a cylinder by means of two sensors spaced apart from each other, and obtaining the cross-correlation function of signals derived from the two sensors, the cross-correlation function being the average of the instantaneous product of the signal from one sensor and that from the other sensor but delayed by a time lag as a function of time lag in order to detect the onset of knock.



4,584,870
MANUFACTURE OF CIGARETTES

Eryk S. Doerman, London, England, assignor to Molins PLC, London, England

Continuation of Ser. No. 561,071, Mar. 24, 1975, abandoned. This application Apr. 20, 1977, Ser. No. 789,101
Claims priority, application United Kingdom, Mar. 22, 1974, 12925/74; France, Mar. 20, 1975, 75 08688; Japan, Mar. 20, 1975, 50-34195; Fed. Rep. of Germany, Mar. 21, 1975, 25125842; Italy, Mar. 21, 1975, 67722 A/75
Int. Cl.[4] G01M 3/26
U.S. Cl. 73—40 **33 Claims**



1. Apparatus for testing the wrappers of cigarettes for leaks comprising means for producing a series of first electrical signals indicative of the leakage flow through the wrappers of successive cigarettes, variable gain amplifier means for amplifying said first electrical signals, comparator means responsive to the output of said variable gain amplifier means for producing an ejection signal to eject a faulty cigarette producing a first signal which exceeds a preset limit, and averaging means responsive to the running average level of said first electrical signals for continuously varying the gain of said amplifier means to lower the gain thereof when the running average of said first signals increases and to increase the gain thereof when the running average of said first signals is lowered.

4,584,871
DEVICE AND METHOD FOR TESTING DIFFERENTIAL PRESSURE MEASURING PASSAGEWAYS

Paul Lohn, Houston, Tex., assignor to Control Specialties, Inc., Houston, Tex.

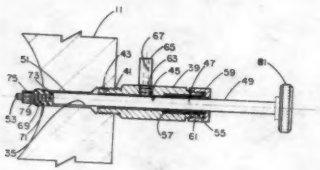
Filed Jul. 2, 1985, Ser. No. 751,662
Int. Cl.[4] G01M 3/26
U.S. Cl. 73—40 **10 Claims**

1. A device for detecting leaks in the differential pressure measuring passageways of an orifice meter tube, the orifice meter tube being designed to be inserted into a pipeline used for custody transfer of gaseous fluids, the meter tube having an orifice fitting hooking an orifice plate which is installed within the orifice fitting within the meter tube perpendicular to the flow of fluid therein, the differential pressure measuring pas-

sageways being located on either side of the orifice plate within the meter tube, the leak detecting device comprising:

a body having an externally threaded end region which is adapted to threadedly engage a mating internally threaded region of the differential pressure measuring passageway which is to be tested, the body having an internal bore therethrough;

an elongated stem adapted to be slidingly received within the internal bore of the body when the body is engaged within the differential pressure measuring passageway, the elongate stem having an exposed end which extends externally from the body and an inner end insertable through



the internal bore of the body at least partially the length of the differential pressure measuring passageway;

packing means for sealing the region of the internal bore adjacent the exposed end of the stem;

a testing port located on the body which communicates with the internal bore of the body for connection of testing equipment; and

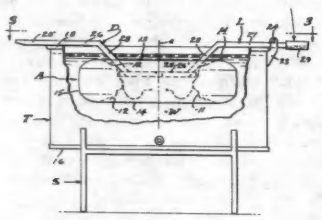
seal means located on the inner end of the elongate stem actuable by manipulation of the elongate stem to seal off the opening of the differential pressure measuring passageway into the orifice fitting for testing the integrity of the passageway.

4,584,872

TIRE MOUNTED CENTERING AND LEVELING DEPRESSOR FOR SUBMERSION TANKS

Carlton W. Stephens, 5803 Brandywine Ct., Camarillo, Calif. 93010

Filed Apr. 11, 1985, Ser. No. 722,116
Int. Cl.[4] G01M *3/06*
U.S. Cl. 73—45.6 **14 Claims**



1. A submersion tank for testing wheel mounted vehicle tires in a leveled, centered and quietly submerged condition, and including;

an upwardly open tank having a bottom and sides to contain a level of water for accomodating a wheel mount floating therein.

the wheel mount being comprised of a tire inflatably installed on a wheel rim having inner and outer flanges anchored with sidewall beads of the tire, and one of said flanges having an exposed inner diameter,

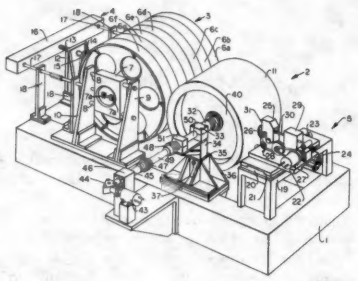
and depressor means comprised of a second class lever with its fulcrum end at one side of the tank, its power end at the other side of the tank, and having a pair of upwardly and outwardly divergent equalizing sections engageable with diametrically opposite points upon the inner diameter of said one wheel flange intermediate its ends to simultaneously level and center and depress the wheel mount in a submerged and quieted condition.

4,584,873

INTEGRATED TIRE CONDITIONING SYSTEM AND METHOD

Theodore Ongaro, Columbus, Ohio, assignor to Ongaro Dynamics, Ltd., Columbus, Ohio

Filed Aug. 27, 1984, Ser. No. 644,527
Int. Cl.[4] G01M *17/02*
U.S. Cl. 73—146 **14 Claims**



1. In tire correcting apparatus wherein the tire is placed in contact with a road wheel to simulate the load borne by the tire in normal use, a tire mounting assembly comprising:

a pair of spaced apart upright arms pivotally mounted on supports intermediate their opposite ends,

a drive shaft rotatably journalled to the upper ends of said upright arms,

means for rotating said drive shaft,

means for mounting a tire on said drive shaft intermediate said upright arms,

resilient load applying means operatively connected to the lowermost ends of said upright arms, said load applying means being movable from an unloaded position to a loaded position, and

actuating means from moving said load applying means from one position to the other.

4,584,874

METHOD FOR DETERMINING POROSITY, CLAY CONTENT AND MODE OF DISTRIBUTION IN GAS AND OIL BEARING SHALY SAND RESERVOIRS

Naum Ruhovets, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 15, 1984, Ser. No. 660,689
Int. Cl.[4] E21B *49/00*
U.S. Cl. 73—152 **7 Claims**

7. A method for determining formation porosity and volume of clay content in fluid bearing shaly sand reservoirs wherein the clay may be dispersed or laminated or both forms of clay where the density of the hydrocarbons is unknown and may vary comprising the steps of:

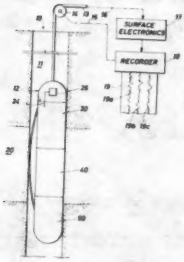
(t) determining first values for the laminated and dispersed clay volumes,

(u) correcting the determined dispersed clay volume to compensate, where appropriate, for the presence of invasion, laminated clay, high water saturation, and very low and very high hydrocarbon density,

(v) as a function of the laminated and dispersed clay volumes, selecting an initial value of effective porosity,

(w) determining the hydrogen index and electron density of the reservoir fluid using the effective porosity value determined in the preceding step,

(x) when the difference between the hydrogen index and the electron density determined in the preceding step is greater



than a predetermined amount, reducing the value for the laminated clay volume and returning to step (u) until this condition is satisfied,

(Y) computing the effective porosity using at least one of the values determined in step (w), and

(z) outputting the porosity and clay content values.

4,584,875

CONTINUOUS MEASUREMENT OF YARN TWIST

Jae L. Woo, Eastwood, and Boshra D. Farah, Kogarah, both of Australia, assignors to Unisearch Limited, Kensington, Australia

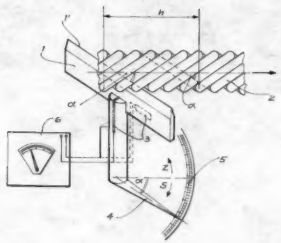
PCT No. PCT/AU83/00109, § 371 Date Apr. 12, 1984, § 102(e) Date Apr. 12, 1984, PCT Pub. No. WO84/00781, PCT Pub. Date Mar. 1, 1984

PCT Filed Aug. 12, 1983, Ser. No. 606,774

Claims priority, application Australia, Aug. 12, 1982, PF5359

Int. Cl.⁴ G01H *17/00*

U.S. Cl. 73—160 **10 Claims**



1. A method of measuring twist in a translating yarn comprising sensing the frequency of vibration of a fixed blade having an edge in contact with the translating yarn and calculating the twist of the yarn which is a function of the frequency of vibration of said blade.

4,584,876

AIR COMPRESSOR TEST APPARATUS

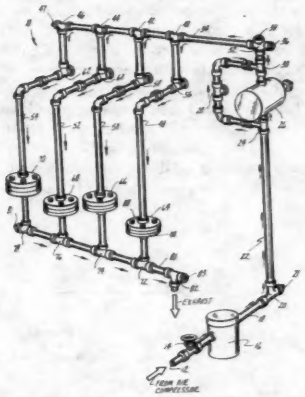
Theophil Aprill, Jr., Ann Arbor, Mich., assignor to Allied, Inc., Ann Arbor, Mich.

Filed Feb. 15, 1985, Ser. No. 702,280

Int. Cl.⁴ G01M *19/00*

U.S. Cl. 73—168 **11 Claims**

1. Apparatus for use in testing the efficiency of an air compressor comprising an inlet for receiving compressed air delivered by a running air compressor, an outlet through which compressed air received at the inlet is exhausted, and circuit means between said inlet and said outlet through which compressed air passes, and an orifice plate arranged in said circuit means generally transverse to the direction of compressed air flow through said circuit means, said plate comprising a fixed orifice of known size through which the compressed air flow



passes and selectively operable means for creating a predetermined pressure relationship between said orifice means and said air compressor which is being tested, such that measurements taken from selected points in said circuit means are used to calculate the air compressor efficiency while the air compressor is running.

4,584,877

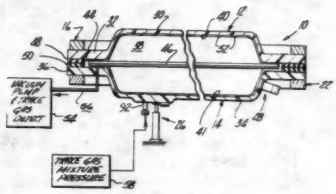
METHOD AND FIXTURE FOR LEAK DETECTION

Semyon Brayman, 28023 Berkshire, Southfield, Mich. 48076

Filed Jun. 7, 1984, Ser. No. 618,332

Int. Cl.⁴ G01M *3/20*

U.S. Cl. 73—40.7 **18 Claims**



1. A leak test fixture for testing hollow container test pieces comprising a pair of separable housing members, each housing member being generally bowl-shaped with a generally dome-shaped central region surrounded by a peripheral rim portion, said central region of each of said housing members being deflectable inwardly under pressure and said rim portion of each of said housing members being relatively rigid;

means mounting each of said housing members for movement together with said rim portions and the inside of each of said central regions facing each other;

means creating a sealing engagement of said housing members upon said movement together to define a cavity therebetween, defined by said central regions and configured to receive a test piece with clearance spaces between the interior of said housing members and the exterior of said test piece;

at least one sealing actuator arrangement carried by at least

one of said housing members comprised of a sealing plug positioned within said test cavity to be engageable with an opening on a test piece also positioned within said test cavity, and means moving said sealing plug into sealing engagement with said test piece opening;

the interior of each of said central regions formed with spaced ribs extending thereacross to be adapted to contact a test piece disposed in said test cavity upon inward deflection of said central regions;

means for pressurizing the interior of a test piece placed in said test cavity with a test fluid;

means for at least partially evacuating the clearance space between said housing members and said test piece to initiate flow of said test fluid thereinto in the presence of a leak in said test piece; and,

means for detecting the presence of test fluid from the interior of said test piece in said clearance space.

4,584,878

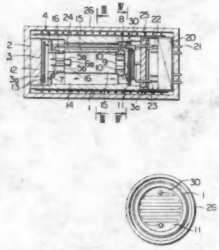
GAS-RATE SENSOR

Yasunobu Katsuno, Kanae, Japan, assignor to Tamagawa Seigi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 653,450

Int. Cl.[4] G01P *15/08*

U.S. Cl. 73—497 **4 Claims**



1. In a gas-rate sensor having a sealed hollow cylindrical casing with a hollow cylindrical space being coaxially formed therein, a gas pump arranged within said casing at one end of said cylindrical space to generate a gas flow therein, a nozzle means arranged within said casing at the other end of said cylindrical space so as to inject said gas flow into said cylindrical space as a gas jet, and a pair of thermosensitive elements arranged within said cylindrical space near said one end thereof so as to be subjected to said gas jet, whereby when said casing is applied an angular velocity input said gas jet is forced to be deflected relative to said casing so that said thermosensitive elements are unequally cooled, causing change in electrical resistance proportional to said angular velocity input between said pair of thermosensitive elements, and said angular velocity being allowed to be detected by the measurement of said temperature difference, the improvement wherein:

said hollow cylindrical space of said hollow cylindrical casing being provided with a heater plate therein to directly heat said gas sealed within said casing so that said thermosensitive elements can be heated to a predetermined temperature by said heated sealed gas within a short time.

4,584,879

COMPONENT INSPECTION BY SELF GENERATED TRANSIENT STRESS WAVE DETECTION

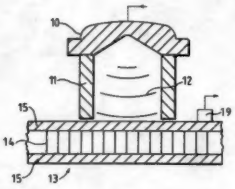
John R. Webster, and Trevor J. Holroyd, both of Mickleover, England, assignors to Rolls-Royce Limited, London, England

Filed Jun. 18, 1984, Ser. No. 621,729

Claims priority, application United Kingdom, Aug. 10, 1983, 8321479

Int. Cl.[3] G01N *29/04*

U.S. Cl. 73—588 **6 Claims**



1. A method of inspecting a component comprising the steps of:

exposing the surface of said component to the sonic output of a sonic transmission means, said sonic output being at at least one frequency from causing adjacent abutting surfaces within said component to move relative to one another, said moving surfaces generating transient broadband stress waves; and

detecting said generated transient broadband stress waves to provide evidence of the existence of any such moving adjacent abutting surfaces.

4,584,880

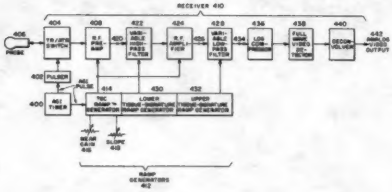
TISSUE SIGNATURE TRACKING TRANCEIVER

Terrance Matzuk, Verona, Pa., assignor to Dymax Corporation, Pittsburgh, Pa.

Filed Jun. 4, 1984, Ser. No. 616,581

Int. Cl.[4] G01N *29/04*

U.S. Cl. 73—609 **12 Claims**



1. For use with an ultrasound transducer, a selected bandwidth ultrasound tranceiver comprising:

means for generating an ultrasound signal having a selected amplitude and frequency;

means for energizing said transducer for signal propagation through a medium according to said ultrasound signal, wherein said transducer provides a reflected signal upon recipt of a reflection of said propagated signal with said medium; and

means for receiving said reflected signal, comprising:

filter means receiving said reflected signal and having selectively decreasing high and low frequency cutoff characteristics for increasing depth of reflections of said propagated signal; and

detector means providing an output signal according to the output of said filter, wherein

said detector means output signal describes the reflective characteristics of said medium, the amplitude variations

and relative time intervals provide indication of medium reflectivity at corresponding medium depth.

4,584,881

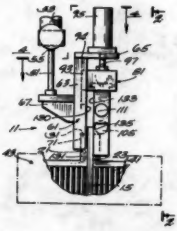
WELD TESTING HEAD

Joseph Hogan, South Bend, Ind., assignor to Mac Engineering and Equipment Company, Inc., Benton Harbor, Mich.

Filed Jun. 15, 1984, Ser. No. 621,118

Int. Cl.[4] G01N *3/24*

U.S. Cl. 73—842 **2 Claims**



1. Apparatus for testing the weld strength of a battery connection extending through a hole in a battery partition and between first and second lugs located in adjacent parallel relation to the partition and each including an end surface and a pair of side surfaces extending in parallel relation to each other and in transverse relation to the end surface, said apparatus comprising a vertically movable main frame including a holding surface adapted for engagement with the end surface of the first lug and for retaining the end surface of the first lug against vertical movement, a sub-frame carried by said main frame and movable vertically relative to said main frame, means carried by the sub-frame and including at least one horizontally movable member for clampingly engaging the side surfaces of the second lug to said sub-frame, means for applying a force for horizontally displacing said clamping member to clampingly engage the second lug to said sub-frame, and means for applying a force for vertically upwardly displacing said sub-frame while maintaining said sub-frame in clamping engagement with the second lug and while maintaining the end surface of the first lug against vertical movement, whereby to subject the connection to shearing stress.

4,584,882

DYNAMIC VISCOELASTICITY MEASURING APPARATUS OF TORSIONAL VIBRATION TYPE

Chikao Tosaki, Kawasaki, Japan, assignor to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 293,666, Aug. 17, 1981. This application Sep. 24, 1984, Ser. No. 654,024

Claims priority, application Japan, Sep. 20, 1980, 55-131141

Int. Cl.[4] G01N *29/00*

U.S. Cl. 73—847 **12 Claims**

1. A dynamic viscoelasticity measuring apparatus of torsional vibration type comprising:

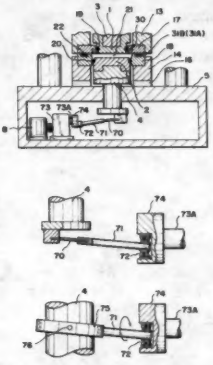
a driving portion for converting a rotary movement to a rotary vibratory movement having

a driving shaft having an eccentric end for rotation at an isometric velocity,

a driven shaft supported at a right angle to said driving shaft for rotation,

an intermediate arm revolving along the side of a cone having a top at the point of intersection of the center line of said driving shaft and the center line of said driven shaft disposed at right angles to each other and a bottom at a circle described by the eccentric end of the driving shaft, and

connecting means for operatively connecting opposite ends of said intermediate arm to said driven shaft and said driving shaft; and



a driving dice for imparting vibration to a specimen, dynamic viscoelasticity of which is to be measured, through said driving shaft, said vibration having an approximately sinusoidal waveform with complete symmetry.

4,584,883

KARMAN VORTEX FLOWMETER

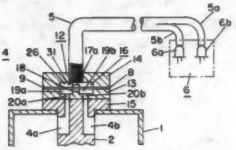
Noriomi Miyoshi, Kawasaki; Michihiko Tsuruoka, Sagamihara, and Mutsumi Nagumo, Musashino, all of Japan, assignors to Fuji Electric Company, Ltd., Japan

Filed Nov. 8, 1982, Ser. No. 439,900

Claims priority, application Japan, Nov. 10, 1981, 56-179071; Nov. 10, 1981, 56-179072; Apr. 22, 1982, 57-66330; Jun. 15, 1982, 57-102673; Jun. 15, 1982, 57-102674; Jun. 15, 1982, 57-102675; Jun. 15, 1982, 57-102676; Jun. 15, 1982, 57-89364; Jun. 15, 1982, 57-102677

Int. Cl.[4] G01F *1/32*

U.S. Cl. 73—861.24 **14 Claims**



1. In a Karman vortex flowmeter provided with a Karman vortex generator inserted in a path for fluid, a vibration chamber disposed outside said path, two pressure guide inlets for introducing into said vibration chamber the pressure variations alternately produced near the two opposite surfaces of said Karman vortex generator, and a vibrator assembly disposed inside said vibration chamber and adapted to vibrate on exposure to said pressure variations;

the improvement comprising said vibrator assembly in which the vibrator assembly comprises a metal plate of uniform thickness which is shaped to include:

a frame portion which surrounds an elongated aperture having two relatively narrow oppositely disposed end channels and a relatively wide central region,

a pair of relatively narrow band portions each of which extends from the frame portion into a different one of the two end channels of the aperture, and

a relatively wide vibrator portion supported by said pair of band portions in the wide central region of the aperture

and adapted to produce torsional vibration about said pair of band portions, the torsion spring constant being low to permit angular displacement of the vibrator portion even for small changes in vortex pressure;

whereby the flow volume of said fluid is determined based on the number of vibrations of said vibrator portion.

4,584,884

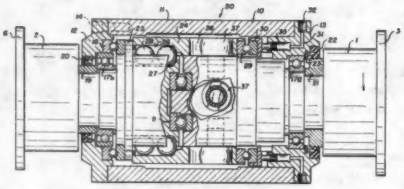
TORQUE SENSOR

Gerald J. Lesko, 12012-39A Ave., Edmonton, Alberta, Canada

Filed Mar. 22, 1985, Ser. No. 714,940

Int. Cl.[4] G01L *3/14*

U.S. Cl. 73—862.19 **1 Claim**



1. A torque sensor for use in the drive line connecting a motor means and a load means, comprising:

a first shaft adapted to be connected to the longitudinally stationary output shaft of the motor means;

a second shaft adapted to be connected to the longitudinally stationary input shaft of the load means;

said first shaft being arranged end to end relative to the second shaft, said first and second shaft ends being spaced apart by thrust bearing means, whereby axial force may be transmitted from the first shaft to the second shaft and yet the first shaft may rotate relative to the second shaft;

a sleeve encasing the adjacent ends of the first and second shafts;

means for slidably interlocking the sleeve with the second shaft, whereby torque applied to the sleeve is transmitted to the second shaft, while permitting the sleeve to be moved longitudinally;

said sleeve forming a plurality of circumferentially spaced, helically arranged slots in that portion of the sleeve encasing the first shaft end, said slots being slanted in the direction of rotation of the first shaft;

said first shaft having a plurality of cam followers, each arranged to extend into one of the slots, to engage an inclined wall surface of said slots, whereby, as torque is applied to the first shaft, the cam followers transmit the torque to the sleeve and the sleeve advances along the first shaft in a direction away from the second shaft;

a housing encasing the sleeve and adjacent ends of the first and second shafts, said housing being adapted to be fixed against movement;

thrust bearing means disposed beteen the second shaft and the housing, whereby the second shaft may rotate but axial force applied to the second shaft by the first shaft is transmitted to the fixed housing;

means, adapted to be biased by the sleeve when the latter moves longitudinally for generating a signal indicative of the extent of sleeve movement, thereby providing a measure of torque.

4,584,885

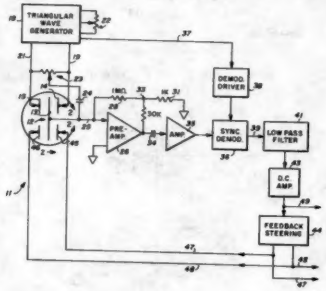
CAPACITIVE DETECTOR FOR TRANSDUCERS

Robert M. Cadwell, Sunnyvale, Calif., assignor to Harry E. Aine and Barry Block, both of Los Altos, Calif.

Filed Jan. 20, 1984, Ser. No. 572,582

Int. Cl.[4] G01L *1/08, 1/14*

U.S. Cl. 73—862.61 **33 Claims**



1. In a method for capacitively sensing displacement in a transducer of the type having a movable member which is displaceable relative to a support structure, the steps of:

electrically exciting a capacitive gap between said movable member and an electrode fixed in position relative to said support structure with a time varying voltage;

sensing from said excited capacitive gap a time varying output signal having an amplitude variable in accordance with the variable spacing between said movable member and said fixed electrode; and

amplifying the sensed time varying output signal in an amplifier having essentially zero input impedance to ground to derive an output current signal, whereby the amplitude of said output current signal is generally independent of stray input capacitance to ground of said amplifier.

21. In a method for capacitively sensing displacement in a transducer of the type having a movable member which is displaceable relative to a support structure, the steps of:

electrically exciting a capacitive gap between said movable member and an electrode fixed in position relative to said support structure with a time varying voltage which is cyclical having a period characterized in that in a first substantial portion of the period, the voltage changes with time at a generally constant first rate and has a first sign and during a second substantial portion of the period, the voltage changes with time at a generally constant rate generally equal to said first rate but of sign opposite to that of said first sign;

sensing from said excited capacitive gap a time varying output signal having an amplitude variable in accordance with the variable spacing between said movable member and said fixed electrode.

4,584,886

RESOLUTION DEVICE FOR SEMICONDUCTOR THIN FILMS

Hideki Matsunaga, Yokohama; Naoyuki Hirate, Yokosuka, and Akira Okada, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 25, 1984, Ser. No. 654,216

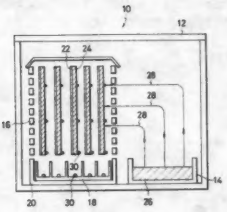
Claims priority, application Japan, Sep. 26, 1983, 58-176503

Int. Cl.[4] G01N *1/28*

U.S. Cl. 73—863 **7 Claims**

1. A semiconductor film resolution device for manufacturing samples to be used for analyzing ultratrace amounts of impurities in semiconductor films by resolving the films with a resolution reagent gas in a sealed container, comprising:

(a) storage means in said sealed container for storing hydrofluoric acid and for generating hydrogen fluoride gas;
(b) hydrofluoric acid stored in said storage means so as to generate said hydrogen fluoride gas;
(c) means for holding at least one semiconductor film sample



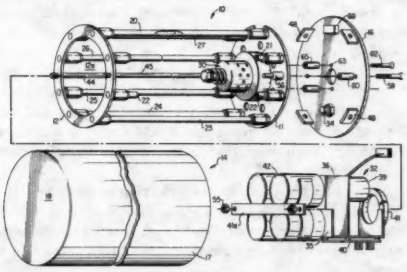
within said sealed container so as to contact said sample with said hydrogen fluoride gas; and
(d) resolved solution tray means provided in said sealed container for receiving resolved solution from said sample so as to separate said resolved solution from both said sample and said hydrofluoric acid.

4,584,887

SOLID SORBENT AIR SAMPLER

Theodore J. Galen, Friendswood, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Oct. 10, 1984, Ser. No. 659,474
Int. Cl.[4] G01N *1/24*
U.S. Cl. 73—863.31 **7 Claims**



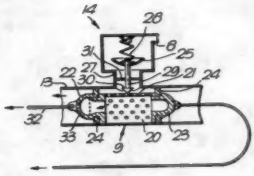
1. A self contained portable fluid sampler comprising:
a. a sample assembly formed of a fluid inlet means; a plurality of sample tubes containing volatile trapping means; a supporting framework for mounting the sample tubes, the sample tubes being mounted longitudinally about the periphery of the framework, a first end of the framework being open providing access to the interior of the framework, a second end of the framework having the fluid inlet means and a multiport valve mounted therein; the multiport valve having an inlet port, a plurality of pairs of sample ports, an outlet port, and a valve member for selectively directing flow from the inlet port to one of a selected pair of sample ports and from the other of the selected pair of sample ports to the outlet port; fluid means connecting the fluid inlet to the inlet port of the multiport valve; and fluid means connecting the sample ports of the multiport valve to one of the sample tubes; the sample port from the inlet side of the multiport valve being connected to the sample tube at the second end of the framework whereby the transit from the inlet of the system to the sample tube is relatively short, the flow path for the sample being formed of non-reactive metallic material whereby contamination is eliminated; and
b. a detachable flow assembly for moving fluid through the sample assembly insertable through the first end of the framework for location interiorly of the periphery containing said sample tubes, said flow assembly including a pump; means for energizing said pump, and coupling means for connecting and disconnecting the pump of the flow assembly to the outlet of the multiport valve, whereby the flow assembly can be disconnected from the sample assembly and withdrawn from the fluid sampler and the sample assembly used in reverse flow relation for analysis of volatiles trapped in said sample tubes.

4,584,888

APPARATUS FOR SAMPLING FLUID FLOW

Norman Bradley, Culcheth, England, assignor to National Nuclear Corporation Limited, London, England

Filed Aug. 29, 1984, Ser. No. 645,269
Claims priority, application United Kingdom, Sep. 15, 1983, 8324727
Int. Cl.[4] G01N *1/16*
U.S. Cl. 73—863.82 **10 Claims**



1. Apparatus for sampling fluid flow in a plurality of passages comprising a conduit, respective flow connections between the passages and the conduit at axially spaced points along the conduit, a device in the conduit having spaced seals engageable with the conduit at axially spaced positions, there being means enabling flow from the space between said seals along the conduit and means for moving the device axially along the conduit to communicate the flow connection of a selected passage with the space between the seals, whereby axial movement of the device enables communication between different passages and said space, and hence along the conduit, to be established at will.

4,584,889

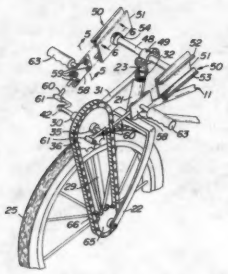
DRIVE MECHANISM FOR OCCUPANT PROPELLED VEHICLE AND THE LIKE

Anthony F. Patroni, Jr., 9005 Amherst Ave., Margate, N.J. 08402

Continuation-in-part of Ser. No. 558,290, Dec. 5, 1983, Pat. No. 4,548,420. This application Dec. 21, 1984, Ser. No. 684,781
Int. Cl.[4] B62M *1/14;* F16H *21/22*
U.S. Cl. 74—49 **7 Claims**

1. A drive mechanism comprising a rotary crank shaft, a pair of crank arms extending radially from said crank shaft, a crank pin extending from each crank arm generally parallel to said crank shaft, a pair of guides mounted for rotary oscillation about an axis spaced radially from said crank shaft, a pair of connecting rods each pivotally connected at one region to a respective crank pin for rotation therewith, a pair of crossheads each shiftable on and rotatable with a respective guide and secured to a respective connecting rod at a location spaced from said one region thereof, and operator actuating means

connected to each of said crossheads for shifting and rotating the latter on its associated guide to rotate said crank pins and



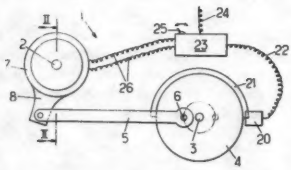
drive said crank shaft, whereby said actuating means move in a figure eight path for multiple muscle toning of the operator.

4,584,890

DEVICE FOR ROTATING, AT WILL AND STEP BY STEP, A SHAFT DRIVEN FROM A DRIVING SHAFT

Guy Chevrollier, Frepillon, France, assignor to Societe d'Applications Generales, Paris, France

Filed Oct. 27, 1983, Ser. No. 545,846
Claims priority, application France, Nov. 9, 1982, 82 18798
Int. Cl.[4] F16D *27/06, 41/04*
U.S. Cl. 74—113 **11 Claims**



1. A device for rotating, at will and step by step, a shaft driven from a driving shaft to which is imparted a continuous and uninterrupted rotational movement in an unvariable direction, said device comprising:

an intermediate rotary member,

means for transforming the continous rotational movement of the driving shaft into an alternating rotational movement of said intermediate rotary member,

declutchable coupling means and a free wheel device interposed between the intermediate rotary member and the driven shaft,

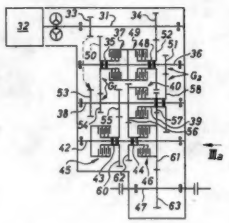
and control means for controlling the declutchable coupling means such that the driven shaft is coupled to the intermediate rotary member for rotation therewith only when the intermediate rotary member effects a rotational movement in the appropriate direction, said free wheel device comprising at least one roller free wheel.

4,584,891

POWER SHIFT TRANSMISSION POWER TRAIN HAVING A FORWARD LOW SPEED GEAR TRAIN WITH DUAL REDUCTION GEAR SET MEANS

Mitsuyoshi Mori, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Japan

Filed Oct. 14, 1983, Ser. No. 541,851
Claims priority, application Japan, Oct. 14, 1982, 57-180764
Int. Cl.[4] F16H *3/08*
U.S. Cl. 74—331 **5 Claims**



1. A power train for a power shift transmission, comprising:

a hollow first input shaft coaxially and rotatably disposed on a first output shaft on a first axis therewith, said first input shaft and said first output shaft being selectively engaged and disengaged with each other through a forward driving first speed clutch;

a second input shaft and a hollow second output shaft coaxially and rotatably disposed on said second input shaft on a second axis therewith, said second input shaft and said second output shaft being selectively engaged and disengaged with each other through a forward driving second speed clutch;

a driving shaft disposed in parallel relation with said first input shaft, said first output shaft, said second input shaft and said second output shaft, said driving shaft being interconnected through transmission gears to said second input shaft;

a driven shaft directly interconnected through transmission gears with said second output shaft;

a forward driving first speed first reduction gear set interconnecting said first input shaft with said second input shaft; and

a forward driving first speed second reduction gear set interconnecting said first output shaft with said second output shaft;

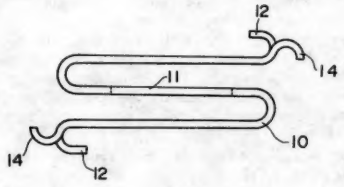
whereby, when said forward driving first speed clutch is engaged so as to engage said first input shaft with said first output shift, driving power may be transmitted from said driving shaft to said driven shaft via said second input shaft interconnected with said driving shaft, said forward driving first speed first reduction gear set interconnecting said first input shaft with said second input shaft, and said forward driving first speed second reduction gear set interconnecting said first output shaft with said second output shaft, such that a first reduction in speed is obtained between said first input shaft and said second input shaft, and a second reduction in speed is obtained between said first output shaft and said second output shaft.

4,584,892

MANUAL TRANSMISSION SYNCHRONIZER

Kazuyoshi Hiraiwa, Atsugi, and Akio Kawaguchi, Sagamihara, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 30, 1982, Ser. No. 445,680
Claims priority, application Japan, Mar. 25, 1982, 57-48024
Int. Cl.[4] F16H *3/38*
U.S. Cl. 74—339 6 Claims



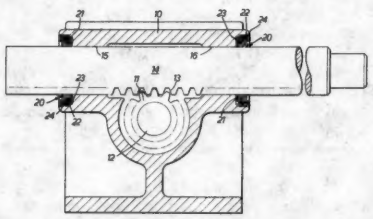
1. In a transmission synchronizer
a synchro hub formed with an aperture;
a coupling sleeve formed with first splines on an internal surface thereof, said splines having chamfers at each end;
a baulk ring operatively associated with a transmission gear, said baulk ring being formed with second splines which are engageable with said first splines; and
a single piece spring disposed in said aperture, said spring comprising:
first and second side members extending radially with respect to said synchro hub and being flexible toward each other in a direction which is essentially normal to the radius of said synchro hub, said first and second side members being formed with portions which are engageable with the chamfers on the first splines;
a base member which extends radially inward into said aperture to a level which is radially inferior of said second splines formed on said baulk ring and which is engageable with said baulk ring to bias said baulk ring in an axial direction thereof upon axial movement of said coupling sleeve toward said transmission gear.

4,584,893

LUBRICATION OF RACK AND PINION APPARATUS

Peter E. Harding, West Down, nr. Ilfracombe, and Richard G. Symes, New Barnstaple, both of England, assignors to Harcross Engineering (Barnstaple) Ltd., Barnstaple, England

Filed Mar. 11, 1983, Ser. No. 474,548
Claims priority, application United Kingdom, Mar. 17, 1982, 8207827
Int. Cl.[4] F16H *1/04*
U.S. Cl. 74—422 6 Claims



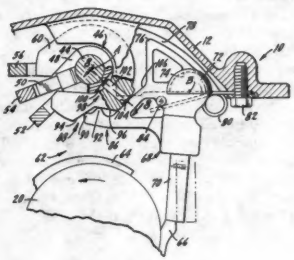
1. A solid lubricating arrangement for rack and pinion apparatus which converts an input rotary motion into an output linear motion or vice versa, comprising:
a housing,
a pinion supported for rotation in said housing,
a rack supported for reciprocating movement in said housing, said rack having teeth in engagement with teeth of the pinion,
said housing forming bearing surfaces interiorly of said housing for supporting said rack and resisting substantially all transverse forces to which said rack is subjected from the outside,
a supply of lubricant for each of said bearing surfaces, each supply comprising a solid lubricant material located next to and separate from a side of each of said bearing surfaces along the direction of said rack toward the exterior of said housing, and
means fixed to said housing in the vicinity of said bearing surfaces for urging each said supply of lubricant to press against said rack including the teeth thereof while allowing the rack to move relative to the lubricant material, so that the lubricant material is carried by said rack to be deposited on said bearing surfaces when said rack reciprocates in said housing.

4,584,894

TRANSMISSION ANTI-CLASH AND ANTI-RATTLE BRAKE

Mark J. Fogelberg, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 29, 1984, Ser. No. 584,567
Int. Cl.[4] B60K *20/04, 41/26*
U.S. Cl. 74—473 R 25 Claims



1. In a multiple speed ratio transmission having a plurality of constantly meshed gears defining a plurality of speed ratios, another gear movable into meshing relationship with said constantly meshed gears for defining another speed ratio, said gears being selectively engageable for establishing speed ratios providing torque delivery paths between an input and an output, and control means movable to a free neutral position and to at least one other neutral position for selecting at least one of said speed ratios, said control means being movable from at least one of said neutral positions for establishing a selected speed ratio; the improvement comprising an anti-clash and anti-rattle brake effective to brake said constantly meshed gears, said brake including means for engaging said brake upon movement of said control means to said free neutral position, and means for disengaging said brake in response to movement of said control means from said free neutral position.

4,584,895

TRANSMISSION SHIFT CONTROL

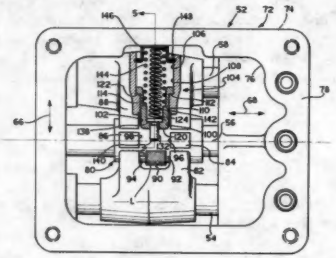
Russell C. Holmes, Troy, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 11, 1984, Ser. No. 619,462
Int. Cl.[4] F16H *57/06;* G05G *9/12*
U.S. Cl. 74—476 20 Claims

1. A shift control mechanism for a gear shift lever operated manual change gear transmission;
a shift bar housing assembly comprising at least three trans-

versely spaced substantially parallel longitudinally extending shift rails, a first most transversely outwardly located shift rail associated with a first shift fork for engagement and disengagement of a reverse speed gear ratio and a second shift rail transversely adjacent to said first shift rail and associated with a second shift fork for engagement and disengagement of the lowest forward gear ratio;

a first shift block mechanism carried by said first shift rail and defining a pair of first longitudinally spaced opposed transversely extending surfaces, a portion of said shift lever transversely moveable relative to said first shift rail for movement into and out of transverse alignment with said first surfaces for engagement therewith;



a second shift block mechanism carried by said second shift rail defining a second pair of longitudinally spaced transversely extending surfaces, said portion of said shift lever transversely moveable relative to said second shift rail for movement into and out of transverse alignment with said second surfaces for engagement therewith;

a detent mechanism comprising a first piston having a free end resiliently biased to extend between said second surfaces and resiliently displaceable toward said first shift rail and a second piston member coaxial with said first piston member and having a free end resiliently biased to be transversely aligned with said first surfaces and resiliently displaceable away from said third shift rail.

4,584,896

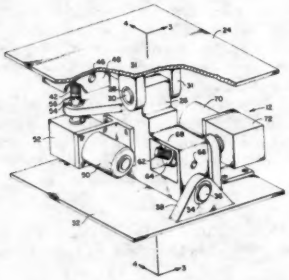
PIVOT AND TRANSLATION MOTION CONTROL APPARATUS

Howard Letovsky, 1929 N. Curson, Hollywood, Calif. 90046

Continuation of Ser. No. 545,121, Oct. 25, 1983, abandoned. This application Sep. 6, 1985, Ser. No. 773,105

Int. Cl.[4] **G05G** *11/00*

U.S. Cl. 74—479 **14 Claims**



1. In an orienter including a support member for supporting an object therefrom, an intermediate structure pivotably connected to the support member at a pivot axis about which the support member pivots relative to the intermediate structure, and an improved pivot movement control mechanism in combination therewith comprising:

pivot actuator means operatively connected between the support member and the intermediate structure at positions laterally displaced from the pivot axis for pivoting the support member about the pivot axis relative to the intermediate structure, comprising:

an elongated pivot shaft having a segment of threads therealong;

a pivot bearing assembly operatively connecting one end of the pivot shaft to the intermediate structure, the pivot bearing assembly rotationally supporting the connected end of the pivot shaft and retaining the connected end of the pivot shaft against axial movement relative to the intermediate structure and transferring axial forces from the connected end of the pivot shaft to the intermediate structure;

a collar having threads for threadably receiving the threaded segment of the pivot shaft;

means pivotably connecting the threaded collar to the support member; and

motor means operatively connected to rotate the end of the pivot shaft supported by the pivot bearing assembly,

the orienter further operative for translating the object while independently allowing pivoting of the object about the pivot axis, a translational movement control mechanism in combination therewith comprising:

a base structure adapted for supporting said orienter;

an elongated lift arm operatively pivotably connected at a lift pivot point at one end thereof to the base structure;

means operatively connecting the other end of the lift arm to the intermediate member; and

lift actuator means operatively connected to the base structure and the lift arm at positions laterally displaced from the lift pivot point, said lift actuator means comprising:

an elongated lift shaft having a segment of threads therealong;

a lift bearing assembly operatively connecting one end of the lift shaft to the base structure, the lift bearing assembly rotationally supporting the connected end of the lift shaft and retaining the connected end of the lift shaft against axial movement relative to the base structure and transferring axial forces from the connected end of the lift shaft to the base structure;

a collar having threads for threadably receiving the threaded segment of the lift shaft;

means pivotably connecting the threaded collar to the lift arm and

motor means operatively connected to rotate the end of the lift shaft supported by the lift bearing assembly to pivot the lift arm about the base structure at the lift pivot point.

4,584,897

RELEASE MECHANISM IN KEY ASSEMBLY

James M. Sharp, Jr., Corinth, Miss., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 21, 1984, Ser. No. 684,774

Int. Cl.[4] **G05G** *1/02, 5/08;* **H01H** *9/20*

U.S. Cl. 74—483 PB **13 Claims**

1. A release mechanism suitable for a key assembly having a line button which is manually depressible for altering an electric circuit connection and a hold button which is manually depressible for releasing said line button, said release mechanism comprising:

first spring means for urging said hold button to a rest position upon release from a manual depression thereof;

a first pin extending transversely of said line button and being fixedly secured thereto;

a second pin extending transversely of said hold button and being oriented generally parallel to said first pin, said hold button having a guide, said second pin being slidably secured to said hold button and being mounted within said

guide for translatory movement along an axis of said second pin;

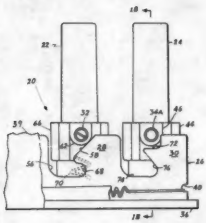
second spring means for urging said second pin along its axis to a rest position;

a release plate having a first inclined edge and a second inclined edge, said plate being positioned for engagement with said first pin and said second pin and being slidably mounted for translatory movement transversely of said first pin and said second pin;

third spring means for urging said release plate toward a reset position; and wherein

said release plate comprises:

a first tongue bounded by said first inclined edge and an undercut, said first inclined edge being oriented for receiving said first pin during a depression of said line button and introducing a translation of said plate away from said reset position of said plate in response to a force exerted on said first inclined edge by said first pin, said first pin entering said undercut upon completion of a movement of



said first pin along said inclined edge of said first tongue; and

a second tongue bounded by said second inclined edge and being oriented for receiving said second pin upon release of said hold button, a force exerted on said second inclined edge by said second pin introducing a translation of said release plate away from said reset position to release said first pin from said undercut, thereby releasing said line button; and wherein

said second tongue has an inclined plane located on a side of said release plate facing said second pin, said inclined plane displacing said second pin along said guide against a force of said second spring means upon a depression of said hold button so as to enable said second pin to travel in a bypass path around said second tongue to contact said second inclined edge upon completion of a depression stroke of said hold button, and wherein the configuration of said second pin and said second tongue with said bypass path reduces wear in the operation of said key assembly while facilitating manufacture of said key assembly.

4,584,898

SPRING-LOADED PUSH-PULL CABLE ASSEMBLY

Lawrence C. Panushka, Canoga Park, Calif., assignor to Lockheed Corporation, Burbank, Calif.

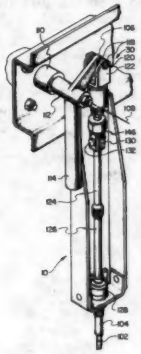
Filed Dec. 28, 1981, Ser. No. 334,977

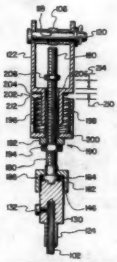
Int. Cl.[4] F16C *1/10*

U.S. Cl. 74—501.5 R **5 Claims**

1. In a push-pull mechanism for moving a lever arm on a control device from a normal position established by an integrally provided stop to an alternative position, said push-pull mechanism comprising a flexible inner cable, an operating handle operatively connected at one end of said cable, an actuating rod having first and second ends, said first end operatively connected at a second end of said cable, and an outer sheath for restricting any spiraling or undulating tendencies in said inner cable so that said actuating rod will be caused to move a predetermined distance in a first longitudinal direction in response to said handle being moved by a distance equal to said predetermined distance plus a backlash distance from a pushed-in to a pulled-out position and to move in all opposite longitudinal direction when said handle is moved from said pulled-out position to said pushed-in position, the improvement comprising:

a spring-loaded backlash compensating coupling operatively connecting said actuating rod with said lever, said spring-loaded coupling being provided with a first adjusting





means for determining an effective distance between said lever and said operating handle when said handle is in its pulled-out position and with a second adjusting means for determining a pre-load compressive force exerted by said coupling against said lever when said handle is at a fully pushed-in position.

4,584,899

LOCKABLE LEVER ARRANGEMENTS

John L. Old, Kenilworth; Gorden P. Jenkins, and Derek J. Bullock, both of Coventry, all of United Kingdom, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 382,023, May 26, 1982, abandoned.

This application Feb. 28, 1985, Ser. No. 707,105

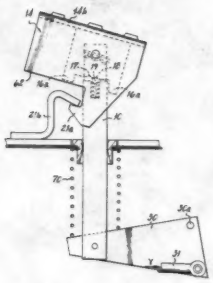
Claims priority, application United Kingdom, Jun. 4, 1981, 8117088

Int. Cl.[4] G05G *5/06*; F16H *1/44*

U.S. Cl. 74—532 **1 Claim**

1. A lockable pedal actuator comprising a pedal mounted on an operating member, the pedal and operating member being together moveable by the application of foot pressure between raised and depressed positions to actuate a device and the pedal being pivotable relative to the operating member between a normal position and a pivoted position, a latching means connected with the pedal and moveable with the pedal relative to the operating member, a latching formation for cooperation with the latching means only when the pedal is in its pivoted position and the operating member and pedal are in their de-

pressed position to hold the pedal and operating member in said depressed and pivoted positions, a first abutment surface associated with the pedal and arranged to contact a second abutment surface associated with the latching formation when the pedal and operating member are moved to their depressed position, the first and second abutment surfaces being shaped to provide a cam action on contact with each other which tends to pivot the pedal to engage the latching formation and to provide a stop to limit the downward movement of the pedal and operating member, a third abutment surface associated with the pedal and arranged, in the event of premature pivoting of the pedal relative to the operating member during movement of the pedal and operating member towards their depressed position, to cooperate with an abutment surface associated with the latching formation to deflect the pedal



back towards its non-pivoted position so that the latching means of the pedal can pass-by the latching formation as the pedal and operating member are moved to their depressed position, and detent means for selectively holding the pedal in its pivoted position to maintain the latching means in engagement with the latching formation or in its normal position so that when the pedal is pivoted to its normal position to disengage the latching formation and to allow the pedal and operating member to rise to their raised position the detent means can maintain the pedal in its normal position, the difference in the inclination of the pedal relative to the operating member when in its normal and pivoted positions respectively being sufficiently large to be detectable by the operators foot to provide a clear indication as to when the pedal and operating member are being held in their depressed position.

4,584,900

STEERING WHEEL FOR AUTOMOTIVE VEHICLE COMPRISING AN INFLATABLE CORE AND THERMOSET RESIN COVER

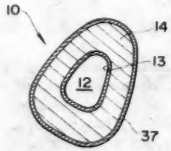
Joji Masuda, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 16, 1980, Ser. No. 197,697

Claims priority, application Japan, Oct. 17, 1979, 54-132793

Int. Cl.⁴ B62D *1/04*

U.S. Cl. 74—552 **13 Claims**



1. A steering wheel for an automotive vehicle, comprising:

an expandable elastic hollow member which is light in weight and capable of maintaining its predetermined shape, said hollow member defining therein a gas-tight sealed space; and

a reinforced plastic material comprising a thermoset resin covering and in contact with said hollow member, said thermoset resin having a sufficient rigidity to render the steering wheel self-supporting in an expanded state.

4,584,901

TORSIONAL VIBRATION BALANCER

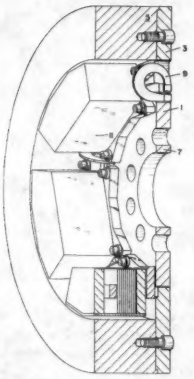
Joachim Conseur, Berlin, Fed. Rep. of Germany, assignor to Carl Hasse & Wrede GmbH, Berlin, Fed. Rep. of Germany

Filed May 27, 1983, Ser. No. 499,105

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1982, 3221987

Int. Cl.⁴ F16F *15/10*

U.S. Cl. 74—574 **6 Claims**



1. Torsional vibration balancer with a viscous damping medium, having an annular seismic mass extending radially beyond a primary member and being guided for smooth rotating movement by a plurality of spring means located opposite said primary member, damping boxes for resilient, damped coupling of said seismic mass being arranged between said primary member and said seismic mass, wherein said damping boxes are attached to a secondary side structural member, said damping boxes having shear sheets extending therein which are connected via at least one intermediate member with said primary member, said damping boxes further having metal sheets extending therein and connected thereto, said metal sheets extending in spaced relation between said shear sheets, the spaces between said metal sheets and said shear sheets being filled with silicon oil.

4,584,902

VALVE ACTUATORS

Jeremy J. Fry, Bath, England, assignor to Rotork Controls Limited, Bath, England

Filed Jun. 1, 1983, Ser. No. 500,008

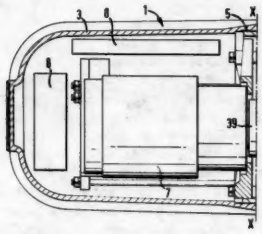
Claims priority, application United Kingdom, Jun. 12, 1982, 8217118

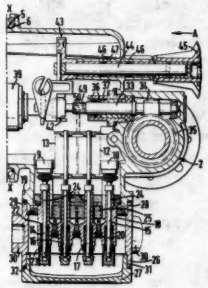
Int. Cl.⁴ F16H *57/02*; H02K *5/00*

U.S. Cl. 74—606 R **11 Claims**

1. A valve actuator comprising only two housings, namely (a) a first housing defining a single enclosure for (1) a reversible electric motor, (2) electrical control gear associated with the motor and (3) torque control means and travel limit switch mechanism and (b) a second housing comprising a gear box containing reduction gearing, a main drive extending from the

electric motor to the reduction gearing and wherein the first housing has an outlet opening sealingly closed by a terminal





block through which pass manual adjustment members for the travel limit switch mechanism.

4,584,903

DRIVE SYSTEM FOR TWIN SCREW EXTRUDER

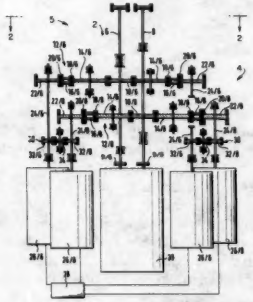
Manfred Hirt, and Heinrich Arndt, both of Augsburg, Fed. Rep. of Germany, assignors to Zahnraderfabrik Renk A.G., Augsburg, Fed. Rep. of Germany

Filed Jul. 6, 1984, Ser. No. 628,525

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325395

Int. Cl.⁴ F16H *37/06*

U.S. Cl. 74—675 **20 Claims**



1. A drive system suitable for a twin screw extruder having a pair of adjacent parallel axis extruder screws, the drive system including two adjacent parallel axis output shafts, each engageable with one of the extruder screws and separate gear train means for driving each output shaft, the gear train means having parallel axes which are adjacent one another, one gear train means being spaced axially behind the other gear train means, each gear train means including a planetary gear set, each planetary gear set comprising a ring gear, a plurality of drive pinions, means journalling the drive pinions for rotation about fixed axes, the drive pinions being in driving engagement with the ring gear, the drive pinions being equidistantly spaced from one another along the periphery of the ring gear, each planetary gear set further including a plurality of planet gears and a sun gear, the planet gears being equidistantly spaced from one another along the periphery of the ring gear, means journalling each planet gear for rotation about a fixed axis, the sun gear axes of the two planetary gear sets being adjacent and parallel to one another and means interconnecting the sun gear of each gear set with one of the output shafts whereby relatively high driving torques are provided.

4,584,904

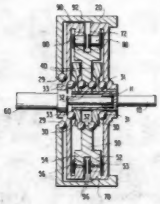
EPICYCLIC TRANSMISSION HAVING FREE ROLLING ROLLER DRIVING ELEMENTS

Robert G. Distin, Jr., Louisville, and James E. Shaffer, Longmont, both of Colo., assignors to Advanced Energy Concepts '81, Limited, Boulder, Colo.

Filed Mar. 26, 1982, Ser. No. 362,195

Int. Cl.⁴ F16H *1/28, 21/12, 55/06, 15/00*

U.S. Cl. 74—804 **27 Claims**



1. A speed reducing transmission comprising:

an input means for providing a rotaary input, an idler, means for converting said rotary input of said input means into orbital movement of said idler;

a stator;

an output member; and

rolling elements disposed between said stator and said idler, said rolling elements comprising rollers, said idler and said stator each being formed with conjugate substantially trochoidal surfaces for engaging each of said rollers, said rollers freely rollingly transmitting torque between said stator and idler, said trochoidal surfaces being formed such that, in operation, all of said rollers are maintained in substantially continuous rolling contact with both said idler and said stator.

4,584,905

METHOD AND APPARATUS FOR CONTROL OF GEAR CHANGING UNDER LOAD IN A TRANSMISSION

Gerhard Eschrich, Gerlingen; Alfred Müller, Gröbenzell; Joseph Sauer, and Achim Schreiber, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE82/00182, § 371 Date Apr. 11, 1983, § 102(e) Date Apr. 11, 1983, PCT Pub. No. WO83/01042, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 7, 1982, Ser. No. 488,548

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1981, 3136725

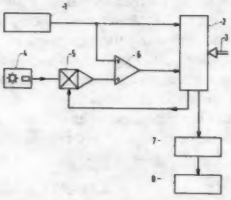
Int. Cl.⁴ B60K *41/04, 41/18*

U.S. Cl. 74—861 **9 Claims**

1. A method for control of gear changing under load in a

stepped gear hydraulic transmission of a motor vehicle driven by an engine, in which, to change gears, frictionally engaged elements (8) such as clutches or brakes are released or closed,

wherein, in accordance with the invention, engine speed is changed during a gear shift for a period of time during which slippage of said frictionally engaged elements occurs,



the length of said slippage time is held constant, regardless of the nature of the particular gear change being effected, and

a hydraulic pressure upon the frictionally engaged elements (8) is selected to be proportional to the sum of an engine torque and the product of the engine speed and a constant factor, the constant factor being dependent on the slippage time and the nature of the gear change.

4,584,906

GEAR SHIFT CONTROL FOR AN AUTOMATIC TRANSMISSION OF A VEHICLE

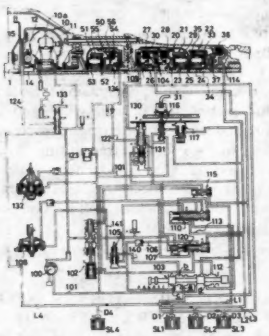
Mitsuru Nagaoka, and Kazuya Oda, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 23, 1984, Ser. No. 603,187

Claims priority, application Japan, Apr. 26, 1983, 58-73230; Apr. 27, 1983, 58-74372; Apr. 27, 1983, 58-74373; Apr. 27, 1983, 58-74374; Apr. 27, 1983, 58-74375; Apr. 27, 1983, 58-74376

Int. Cl.⁴ B60K *41/18*

U.S. Cl. 74—866 **13 Claims**



1. An automatic transmission for vehicles, said automatic transmission comprising:

a torque converter having an input member and an output member,

a multiple stage transmission gear mechanism connected with the output member of the torque converter and having a plurality of gear stages,

gear selecting means for selecting one of the gear stages in the transmission gear mechanism,

vehicle operating condition detecting means for detecting vehicle operating conditions and producing vehicle operating condition signals,

gear shift control means for operating said gear selecting means in accordance with the vehicle operating condition signals to thereby make the gear selecting means select one of the gear stages,

said gear shift control means including first gear shift means having memories of first vehicle operating conditions wherein said gear selecting means is to be operated, second gear shift means having memories of second vehicle operating conditions wherein said gear selecting means is to be operated, traffic jam detecting means for detecting a traffic jam, and means for operating said gear selecting means under said first gear shift means when the traffic jam is not detected but under said second gear shift means when the traffic jam is detected so that a corresponding gear shift operation is carried out at a lower vehicle speed in a traffic jam than in an operating condition wherein the traffic jam is not detected,

said traffic jam detecting means including memory means having memories of a traffic jam zone defined by a relationship between average vehicle speeds and acceleration rates corresponding to the average vehicle speeds, means for detecting an operating condition in terms of an actual average speed in a predetermined time interval and an actual acceleration rate corresponding to the actual average speed, and means for judging that there is a traffic jam when the operating condition is in the traffic jam zone.

4,584,907

METHOD FOR CONTROLLING A RATE OF CHANGING AN RPM RATIO IN A CONTINUOUSLY VARIABLE TRANSMISSION

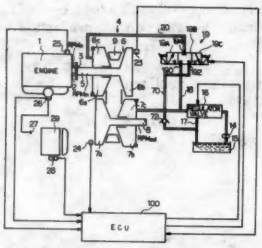
Takao Niwa; Takeshi Gono, and Akinori Osanai, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 17, 1984, Ser. No. 611,358

Claims priority, application Japan, May 20, 1983, 58-87681

Int. Cl.⁴ B60K *41/12, 41/18*

U.S. Cl. 74—866 **14 Claims**



1. A method for controlling a rate of changing an RPM ratio in a continuously variable transmission connected to an engine in a vehicle, the transmisssion having a driving pulley mounted on an input shaft, the driving pulley comprising a fixed member and a movable member, the movable member being actuated by an hydraulic cylinder to form a V-shaped opening between the movable member and the fixed member, a driven pulley mounted on an output shaft, the driven pulley comprising another fixed member and another movable member, said another movable member being similarly actuated by another hydraulic cylinder supplied with a line pressure to form another V-shaped opening between said another movable member and said another fixed member and an endless belt member spanning the pulleys so that an effective diameter of the pulleys can be varied at different rates with regard to each other so that different speed ratios can be obtained, comprising the steps of:

detecting operating parameters of the engine;

calculating a desired rotating speed of the driving pulley as a function of at least one of the detected operating parameters;

calculating a difference between said desired rotating speed of the driving pulley and an actual rotating speed of the driving pulley;

comparing an actual velocity of the vehicle with a first predetermined vehicle velocity and when said actual vehicle velocity is less than or equal to said first predetermined vehicle velocity, a rate of changing said RPM ratio is selected from a first plurality of rates of change of said RPM ratio and when said actual vehicle velocity is greater than said first predetermined vehicle velocity comparing said actual vehicle velocity with a second predetermined vehicle velocity, and when said actual vehicle velocity is less than or equal to said second predetermined vehicle velocity, a rate of changing said RPM ratio is selected from a second plurality of rates of change of said RPM ratio and when said actual vehicle velocity is greater than said second predetermined vehicle velocity said rate of changing said RPM ratio is selected from a third plurality of said rates of change of RPM ratio.

4,584,908

CREEP PREVENTION APPARATUS FOR CAR EQUIPPED WITH AUTOMATIC TRANSMISSION

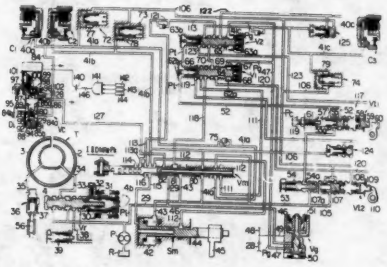
Masao Nishikawa, Tokyo; Yoshimi Sakurai, Tanashi, and Takashi Aoki, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1984, Ser. No. 593,997

Claims priority, application Japan, Mar. 28, 1983, 58-52030

Int. Cl.⁴ B60K *41/18, 41/16*

U.S. Cl. 74—866 **2 Claims**



1. In a creep preventing device for vehicles equipped with an automatic transmission, comprising:

a fluid type torque converter;

an auxiliary transmission having a frictionally engaging element for starting and engine braking and connected to said torque converter;

a manual change-over means capable of being manually shifted between a position allowing said frictionally engaging element to be operated at the time of starting and a position at which said frictionally engaging element is allowed to be operated during engine braking; and

a creep preventing valve disposed in an oil passage that is branched from an operating oil passage leading to said frictionally engaging element and that leads to an oil tank, said creep preventing valve being adapted to open said oil passage during idle operation of the vehicle;

the improvement wherein said creep preventing valve is constructed such that it is operated in opening and closing directions thereof by a common hydraulic pressure of a hydraulic pressure source acting on opposite surfaces of the valve, said opposite surfaces consisting of a first pressure receiving surface of a larger area for receiving thereon the hydraulic pressure toward a closing side of the valve and a second pressure receiving surface of a smaller area than said first pressure receiving surface for receiving thereon said hydraulic pressure toward an opening side of the valve, wherein when said manual change-over means is shifted to said position for engine braking, said creep preventing valve is placed in communication with a pressure source and is urged to a closed state by a hydraulic pressure from said source.

4,584,909

HYDRAULIC CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

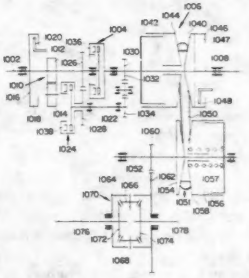
Keiju Abo, Yokosuka; Haruyoshi Kumura; Yoshikazu Tanaka, both of Yokohama; Hiroyuki Hirano, Yokosuka, and Sigeaki Yamamuro, Zushi, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 7, 1983, Ser. No. 559,173

Claims priority, application Japan, Dec. 9, 1982, 57-214625

Int. Cl.⁴ B60K *41/16*; F16H *37/00, 11/06*; G01P *1/02*

U.S. Cl. 74—868 **7 Claims**



7. A hydraulic control system for a continuously variable V-belt transmission which includes a continuously variable transmission mechanism having a drive pulley, a driven pulley and a V-belt interconnecting the drive and driven pulleys and a change-direction gearing disposed between an engine and the drive pulley to establish a forward drive path or a reverse drive path from the engine to the drive pulley, the change-direction gearing including a forward clutch and a reverse clutch, said hydraulic control system comprising:

means for generating an engine revolution speed indicative signal fluid pressure indicative of a revolution speed of the engine;

means for detecting a revolution speed of not only of a forward rotation of the drive pulley, but also of a reverse rotation of the drive pulley for generating a drive pulley revolution speed indicative signal fluid pressure indicative of the revolution speed of the drive pulley;

means for controlling the distribution of fluid pressure between the drive and driven pulleys so as to control a reduction ratio between te drive and driven pulley;

means coupled to said engine revolution speed indicative signal fluid pressure generating means and said drive pulley revolution speed indicative signal fluid pressure generating means for setting the reduction ratio between the drive and driven pulleys to a predetermined reduction ratio value until a difference between said engine revolution speed indicative signal fluid pressure and said drive pulley revolution speed indicative signal fluid pressure is less than a predetermined fluid pressure value;

means coupled to said engine revolution speed indicative signal fluid pressure generating means for generating a clutch actuating fluid pressure which varies with said engine revolution speed signal fluid pressure; and

manually operable means for selectively supplying said

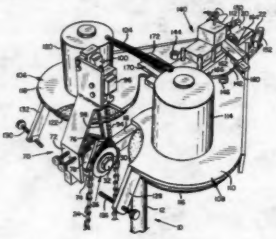
clutch actuating fluid pressure to the forward clutch or the reverse clutch of the change-direction gearing.

4,584,910

GRINDING MACHINE FOR CUTTERS IN SAW CHAIN

Jack F. Simington, Chiloquin, Oreg., assignor to Simington Products Company, Chiloquin, Oreg.

Filed Apr. 8, 1985, Ser. No. 720,863
Int. Cl.[4] B23D *63/16*
U.S. Cl. 76—40 **9 Claims**



1. A grinding machine for grinding the cutters in saw chain cutter links comprising:

saw chain support means for supporting the bottom portion of a reach of saw chain with the top portion of the chain projecting outwardly from the support means,

indexing means for positioning a cutter link in a reach of saw chain occupying said support means with the cutter link in a grinding station,

first and second power-driven grinding wheel assemblies located on opposite sides of a reach of chain supported by said support means,

each grinding wheel assembly including a power-rotated grinding wheel and a mounting for the wheel accommodating bodily movement of the wheel from a retracted position, where the edge of the wheel is spaced from said grinding station, and a working position, where the edge of the wheel extends into the grinding station with grinding of the cutter of a cutter link located in said grinding station, the plane of the grinding wheel of one grinding wheel assembly having a relationship with respect to a cutter link in said station appropriate to grind the cutter of cutter links of one hand and the plane of the grinding wheel of the other grinding wheel assembly having a relationship with respect to a cutter link in the grinding station appropriate to grind the cutter of cutter links of opposite hand.

4,584,911

CORKSCREW DEVICE

Ferdinando Cellini, Maniago, Italy, assignor to Farm DI F.S.a.s., Maniago, Italy

Filed Sep. 21, 1984, Ser. No. 652,907
Claims priority, application Italy, Oct. 28, 1983, 60470/83[U]
Int. Cl.[4] B67B *7/04, 7/44, 7/16*
U.S. Cl. 81—3.36 **12 Claims**

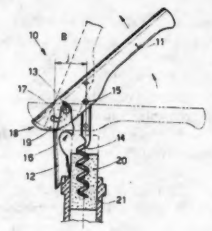
1. A corkscrew device comprising

a lever means of the second order,

a support to which said lever means is rotably connected,

screw means to which said lever means is connected, said screw means having a pivot,

a rotatable connection pin between said lever means and said support, the distance on said lever means between said pivot and said rotatable connection pin defining a resistance arm, and



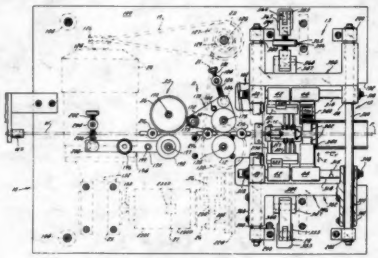
conditioning means comprising a cam means cooperating with an abutment means for varying said resistance arm.

4,584,912

WIRE FEEDING, CUTTING AND STRIPPING APPARATUS HAVING CLUTCH-OPERATED FEED AND CAM-OPERATED CUTTER/STRIPPER

Ragnar Gudmestad, West Allis; Robert O. Dusel, Brookfield, and James Berres, Milwaukee, all of Wis., assignors to Artos Engineering Company, New Berlin, Wis.

Filed May 6, 1985, Ser. No. 731,021
Int. Cl.[4] H02G *1/12*
U.S. Cl. 81—9.51 **9 Claims**



1. Apparatus for feeding, cutting and stripping an insulated wire strand comprising:

wire feed means operable to feed said strand along a path;

wire cutter/stripper means for receiving said wire strand from said wire feed means and operable to cut a wire segment from said strand and to strip insulation;

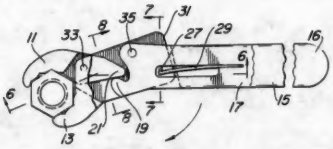
drive means for operating said wire feed means and said cutter/stripper means and comprising a motor, a selectively operable feed clutch mechanism connected between said motor and said wire feed means, a rotatable cam, a selectively operable one-revolution clutch mechanism connected between said motor and said cam, and linkage means connected between said cam and said wire cutter/stripper means;

and control means for controlling operation of said feed clutch mechanism and said one-revolution clutch mechanism and comprising timer means to initiate operation of said feed clutch mechanism to start wire feed, wire measuring means responsive to the length of strand fed to operate said feed clutch mechanism to terminate wire feed and to initiate operation of said onerevolution clutch mechanism and thereby initiate operation of said wire cutter/stripper means.

4,584,913
COMPACT RATCHET WRENCH WITH QUICK-RELEASE LEVER

George T. Logan, Glenmoore, Pa., assignor to Thomas Logan, Doylestown, Pa.

Filed Jul. 18, 1984, Ser. No. 632,030
Int. Cl.[4] B25B *13/28*
U.S. Cl. 81—91.2 4 Claims



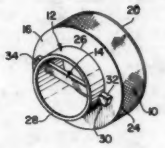
1. A ratchet wrench, comprising:
(a) a stationary jaw having notches for gripping a workpiece such as a nut or bolt and two extended sideplates forming a yoke;
(b) a handle pivotally affixed to said stationary jaw, said handle having a narrow extended portion lying between said stationary jaw sideplates;
(c) a first pin member connecting said stationary jaw and said handle;
(d) a moveable jaw opposite said stationary jaw and having notches compatible with the notches on the stationary jaw, said moveable jaw having a narrow extended portion lying between said stationary jaw sideplates and being pivotably affixed thereto;
(e) a second pin member connecting said moveable jaw and said stationary jaw;
(f) a nose lever extending from said moveable jaw between the stationary jaw sideplates;
(g) a toe lever extending from the handle between the stationary jaw sideplates being located to frictionally engage said nose lever such that the turning of the handle will act to close the stationary jaw and moveable jaw about a workpiece such as a nut or bolt;
(h) a resilient leaf spring member affixed between the handle and the stationary jaw;
(i) said handle comprising three parts joined together; two side pieces and a center piece, said center piece formed to receive said leaf spring member, whereby said leaf spring member is partly enclosed within said handle;
(j) a release lever formed from the extension of the stationary jaw sideplates;
(k) said first and second pin members being located along a line tangent to the inner radius of the moveable jaw; and
(l) said nose lever and said toe lever engaging at a point approximately along a first line parallel to a second line which connects the first and second pin members, said first line passing through the axis of the workpiece.

4,584,914
RETAINER WRENCH

Charles T. Hall, Danville; Harry L. Woodard, Sheffield; Jimmy C. Terry, Courtland; Curtiss O. Willis, Muscle Shoals, and Phil W. Hendrix, Decatur, all of Ala., assignors to Champion International Corporation, Stamford, Conn.

Filed Aug. 1, 1984, Ser. No. 636,625
Int. Cl.[4] B25B *13/48*
U.S. Cl. 81—176.15 10 Claims

1. A wrench for removing and installing hollow cylindrical retainers having end edge driving recesses, comprising:
a base cylindrical member having first and second opposite axial ends, a substantially planar stop surface on said first end and a bore in said second axial end for attaching a handle, said bore having a polygonal transverse cross-sectional configuration;
a cylindrical wall defining a tubular guide member having an axial end edge fixedly coupled to said base member and having a longitudinal axis substantially perpendicular to

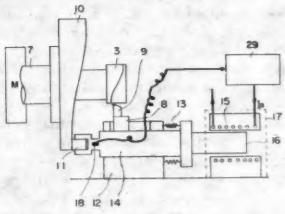


said stop surface, said guide member having diametrically opposite openings in said cylindrical wall; and
an elongated bar lying on said stop surface and extending through said openings in said guide member, said bar being rectangular in transverse cross section.

4,584,915
CONTROL SYSTEM FOR A CAM FOLLOWER AND TOOL

Takashi Ichiyanagi, Hirakata, and Kiyokazu Imanishi, Higashi Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00375, § 371 Date Aug. 5, 1982, § 102(e) Date Aug. 5, 1982, PCT Pub. No. WO82/02016, PCT Pub. Date Jun. 24, 1982
Continuation of Ser. No. 405,952, Aug. 5, 1982, abandoned. This PCT application Dec. 9, 1981, Ser. No. 719,043
Claims priority, application Japan, Dec. 11, 1980, 55-175535; Jan. 16, 1981, 56-5278
Int. Cl.[4] B23B *3/28*
U.S. Cl. 82—19 5 Claims



1. A control system for a cam follower and tool, comprising:
a cam having a predetermined shape,
means, connected to the cam, for rotating and supporting the cam,
a cam follower for contacting said cam along said predetermined shape,
a driven section connected to said cam follower,
means, connected to the driven section, for driving said driven section,
a guide means supporting said driven section,
a detector means, operatively connected to the cam follower, for detecting the force of contact between said cam and said cam follower,
a control circuit means, connected to the detector means, for arithmetically comparing the force of contact detected by said detector means with a preset value, and
a load compensator means, connected to said cam follower, for loading said cam follower with a predetermined force in accordance with a signal from said control circuit means,

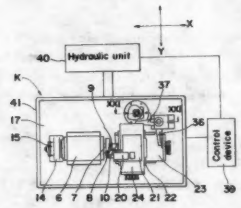
whereby said force of contact becomes substantially equal to said preset value.

4,584,916

LEAD FACE MACHINING APPARATUS

Mamoru Inoue; Morimichi Hasegawa; Shozi Hara, all of Hirakata; Kiyokazu Imanishi, Osaka; Yoshiyuki Kubota, Hirakata, and Haruhiko Kitagawa, Okayama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 21, 1982, Ser. No. 400,264
Claims priority, application Japan, Jul. 23, 1981, 56-115754
Int. Cl.[4] B23B *3/28, 19/02, 21/00;* **F16C** *32/06*
U.S. Cl. 82—19 **4 Claims**



1. A lead face machinine apparatus comprising:

a spindle unit which has a workpiece rotatably mounted thereon and includes a housing and a spindle rotatably supported by said housing;

said housing having a static pressure fluid bearing formed between said spindle and said housing;

an end cam which is provided rotatably together with said spindle;

a first slide table which includes a first guide member extending in an axial direction of said spindle unit, and a first table provided slidably along said first guide member;

said first table having a first static pressure fluid bearing consisting of a first passage for introducing fluid between said first guide member and said first table, a plurality of return passages for returning said fluid to a pressure generating unit so as to constitute a first static pressure fluid bearing between said first table and said first guide member, and additional return passages for returning said fluid to said pressure generating unit spaced further from said first passage than said plurality of return passages;

a second slide table which includes a second guide member extending substantially at right angles to the axial direction of said spindle unit, and a second table provided slidably along said second guide member;

said second table having a second static pressure fluid bearing consisting of a second passage for introducing the fluid between said second guide member and said second table, a plurality of return passages for returning the fluid to said pressure generating unit so as to constitute a second static pressure fluid bearing between said second table and said second guide member, and additional return passages for returning said fluid to said pressure generating unit spaced further from said first passage than said plurality of return passages;

means for moving said first slide table and means for moving said second slide table in a direction substantially perpendicular to the direction of movement of said first slide table, one of said tables being provided on the other of said tables;

a lead machining unit which is placed on one of said tables so as to be brought into contact with said end cam and includes a cutting tool;

said cutting tool being caused to slide in the axial direction of said spindle unit upon rotation of said end cam so as to machine said workpiece mounted on said spindle unit;

fluid supplying means for supplying fluid to said static pressure fluid bearing, said first static pressure fluid bearing and said second static pressure fluid bearing in common; and

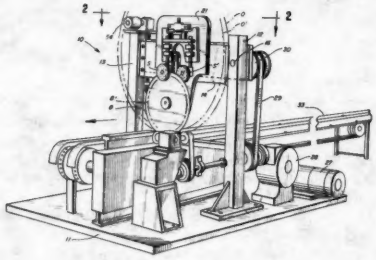
means for withdrawing fluid from said additional return passages.

4,584,917

AUTOMATIC BLADE DIAMETER COMPENSATION FOR LOG SAWS

Lawrence E. Blom, Pulaski, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Dec. 6, 1984, Ser. No. 678,771
Int. Cl.[4] B26D *7/12*
U.S. Cl. 83—174 **4 Claims**



1. In apparatus for transversely cutting logs of web material wherein logs are sequentially advanced along a first path and a rotating disc blade is mounted in said apparatus for movement in a second path through said first path from one side to the other of said first path to transversely sever said logs and sharpening means are provided in said apparatus for sharpening said blade, the improvement characterized by means in said apparatus for incrementally changing the relationship of said sharpening means and said blade to compensate for diameter reduction of said disc blade, said apparatus being equipped with means for altering the relationship of said paths to also compensate for diameter reduction of said blade, said second path being a circular orbit having its center above said first path, said incrementally altering means being adapted to maintain the nadir of said orbit below said first path, said incrementally altering means including means mounted on said apparatus below said first path for sensing the nadir of said orbit and delivering an actuating signal whenever said nadir is not below said first path.

4,584,918

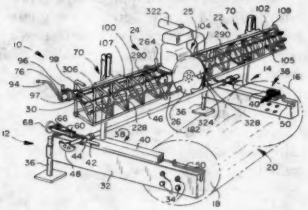
PORTABLE SAWMILL

Richard J. Stubbe, 9136 E. Artesia Blvd., No. 4, Bellflower, Calif. 90706, and Kenneth C. Stubbe, 1376 Purdue St., Upland, Calif. 91786

Filed Aug. 8, 1984, Ser. No. 638,960
Int. Cl.[4] B27B *7/02*
U.S. Cl. 83—471.3 **19 Claims**

1. A lumber cutting machine comprising a track supported to extend parallel to a log to be longitudinally cut into lumber, a carriage mounted to move in longitudinally reciprocal fashion upon said track, a power source mounted in fixed orientation upon said carriage, a single rotary saw blade coupled to receive a driving, rotary input from said power source, an arbor carrying said saw blade and mounted for rotation relative to said carriage and relative to said power source about a longitudinal axis to alternatively carry said saw blade in an elevated position in a vertical plane and a lowered position in a horizontal plane, latching means on said carriage for latching said arbor to hold said saw blade in said elevated position, and

means for tripping said latching means to release said arbor to allow said arbor to rotate downwardly and said saw blade to



fall due to the force of gravity from said elevated position to said lowered position.

4,584,919

DRUM CUTTING MACHINE, E.G. FOR SLICING SUGAR BEET

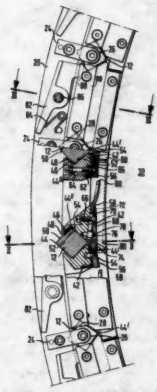
Hans-Joachim Bittner, Hagen, Fed. Rep. of Germany, assignor to H. Putsch GmbH & Comp., Hagen, Fed. Rep. of Germany

Continuation of Ser. No. 560,556, Dec. 12, 1983, abandoned. This application Sep. 6, 1985, Ser. No. 773,518

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246439

Int. Cl.[4] B26D *1/36, 3/28*

U.S. Cl. 83—663 **26 Claims**



1. A cutting blade-holding drum for a drum cutting machine for slicing sugar beet, comprising a drum having an axis and a plurality of holding structures which are arranged at equal distances over the periphery of the drum and extend substantially parallel to the drum axis, and a plurality of blade boxes, each blade box being held between two of the holding structures and securing a cutting blade therein, the cutting blade having its cutting edge directed substantially in the peripheral direction of the drum, in which the holding structures comprise rods which, as separate parts, are detachably connected to at least one drive disc, the rods being covered towards the drum interior by wearing parts.

4,584,920

CIRCULAR SAW BLADE

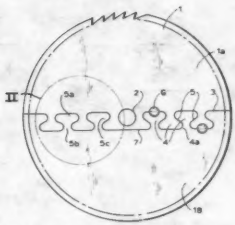
Roettger Jansen-Herfeld, Remscheid, Fed. Rep. of Germany, assignor to Richard Jansen GmbH, Remscheid, Fed. Rep. of Germany

Filed Feb. 6, 1985, Ser. No. 698,626

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1984, 3405407

Int. Cl.[4] B23D *61/02*

U.S. Cl. 83—838 **7 Claims**



1. A circular saw blade having a central bore and a toothed peripheral edge, said saw blade being subdivided into at least two individual sectors by at least one interruption cut extended substantially from said peripheral edge to said central bore to form between said sectors at least one sound-damping slot, said interruption cut having a serpentine shape and forming in each sector a plurality of projections alternating with recesses, said sectors being arranged opposite to each other so that the projections of one sector are received in the recesses of the other sector, each of said projections including a wider portion, a narrower portion, and an intermediate portion between said wider and narrower portion, each intermediate portion of the projection of one sector facing a corresponding intermediate portion of an adjacent projection of the other sector, the intermediate portions of the projections of two opposite sectors being spaced from each other at a distance, said distance increasing in the direction towards said central bore so that the distances between the intermediate portions of the projections which are close to the periphery of the blade are zero and the distance between the intermediate portions of the projections which are positioned near the central bore is maximal.

4,584,921

TONE WAVESHAPE GENERATION DEVICE

Masatada Wachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 589,137, Mar. 13, 1984, abandoned. This application Aug. 16, 1985, Ser. No. 766,087

Claims priority, application Japan, Mar. 16, 1983, 58-42409

Int. Cl.[4] G10H *1/00*

U.S. Cl. 84—1.01 **16 Claims**

1. A tone waveshape generation device comprising:

means for providing a key code information identifying a selected note

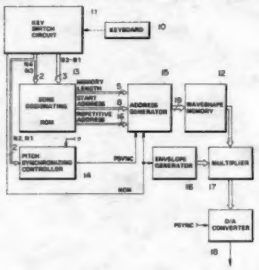
a waveshape memory including memory zones having memory capacities which differ from one another depending upon respective predetermined tone pitch ranges, each of said ranges encompassing a plurality of musical notes, said memory zones each storing data of a full waveshape of an attack portion and plural periods of a subsequent repetitive portion of a musical tone waveshape;

memory zone designation means, responsive to said key code information, for designating the one of said memory zones corresponding to the tone pitch range which encompasses said selected note of a tone to be generated;

readout means, having a controllable readout rate, for once reading out from said designated memory zone said data representing said full waveshape of an attack portion and

for thereafter repeatedly reading out from said designated memory zone said data representing said plural periods of a repetitive portion of a waveshape; and

controller means, cooperating with said readout means, for establishing the readout rate of said waveshape data from



said designated memory zone in accordance with said key code information designating the selected note within said tone range, said controller means establishing a different readout rate for each of said plural notes within the corresponding tone pitch range.

4,584,922

ELECTRONIC MUSICAL INSTRUMENT

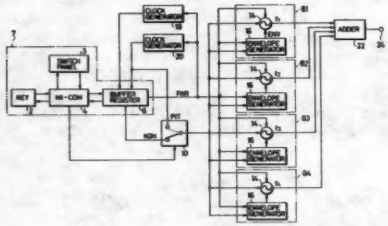
Maki Kamiya, Iwata, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 1, 1984, Ser. No. 667,268

Claims priority, application Japan, Nov. 4, 1983, 58-208183

Int. Cl.[4] G10H *1/42, 7/00*; G10L *5/02*

U.S. Cl. 84—1.01 **8 Claims**



1. An electronic musical instrument comprising:

tone generation designating means generating in response to depression of playing keys a plurality of sets of parameter signals, each set per each key, designating the properties of tones to be generated respectively and a plurality of key-on signals each representing the depression of each key,

vibrating wave generating means associated with said tone generation designating means and generating a plurality of vibrating wave signals having tone properties including frequencies designated by said respective parameter signals and having a wave shape starting from a predetermined initial phase point responsive to said respective key-on signals,

a first clock pulse generator associated with said tone generation designating means and generating time frame clock pulses of a predetermined period defining consecutive time frames,

a second clock pulse generator associated with said tone generation designating means and generating pitch clock pulses of predetermined periods for the respective time frames respectively defining fundamental pitches of human voice to be produced, and

controlling means associated with said tone generation designating means and said vibrating wave generating means and controlling said tone generation designating means so as to generate for said respective time frames a plurality of parameter signals designating a plurality of frequencies corresponding to a plurality of formant frequencies of human voice to be produced and rendering said pitch clock pulses to be fed to said vibrating wave generating means in place of said key-on signals, said vibrating wave generating means thereby generating vibrating wave signals simulating human voices.

4,584,923

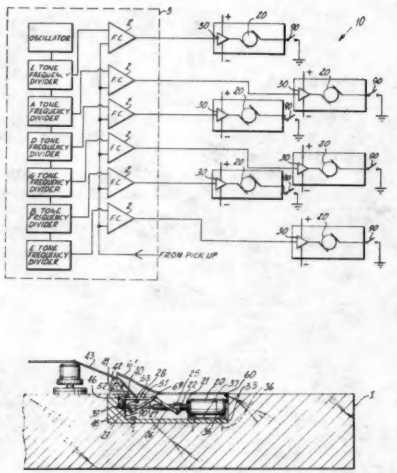
SELF TUNING TAIL PIECE FOR STRING INSTRUMENTS

Gregory B. Minnick, 12740 NW. 2nd Ave., North Miami Beach, Fla. 33168

Filed Mar. 5, 1985, Ser. No. 708,547

Int. Cl.[4] G10G *7/02*; G10H *3/00*

U.S. Cl. 84—454 **3 Claims**



1. An automatic tuning device for instruments having a plurality of strings and transducer means for converting the accoustic energy produced said strings to an equivalent electric signal, comprising:

A. a plurality of means for generating a plurality of reference tones corresponding to each of said plurality of strings;

B. a plurality of means for comparing said reference tones to the tones produced by said strings through said transducer means, including means for producing an electrical output signal when said tones do not match;

C. a plurality of motor means activated by said output signal, including a corresponding plurality of means for enabling one of said motor means at a time; and

D. a plurality of string tensioning means mechanically connected to said strings at the tail piece of said instrument and activated by said motor means and said tensioning means including a threaded sleeve member rigidly mounted to a shaft of said motor means and a moving nut member pivotally connected through linkage arm means to the end of one of said strings so that its tension may be varied in direct proportion to rotation of said shaft;

E. motor driving means connected to said motor means.

4,584,924

SILENCER FOR FIREARMS

Mitsuo Taguchi, Keskuskato 29, 81100 Kontiolahti, Finland

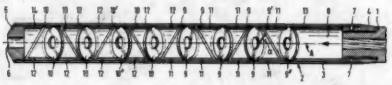
PCT No. PCT/FI82/00052, § 371 Date Jun. 17, 1983, § 102(e) Date Jun. 17, 1983, PCT Pub. No. WO83/01680, PCT Pub. Date May 11, 1983

PCT Filed Nov. 2, 1982, Ser. No. 513,120

Claims priority, application Finland, Nov. 3, 1981, 813466

Int. Cl.⁴ F41C *21/18*

U.S. Cl. 89—14.4 **4 Claims**



1. A silencer for the barrel of a firearm, comprising:

a sheath (3) having an interior surface defining an interior space having open opposite ends, the sheath having a longitudinal axis (A);

a fixed collar (4) connected to said sheath at one open end thereof for connecting said sheath to a firearm barrel;

a plurality of elliptical partition plates (9,10) connected in said sheath and extending fully across said interior space, each partition plate having an opening therethrough of a size wider than a caliber for the firearm barrel and a periphery in contact with said interior surface, each partition plate lying in a plane which is inclined at an acute angle of from 30° to 60° with respect to said axis, each partition plate in a direction along said axis away from said fixed collar being rotated around said axis by a selected further angle of 90° with respect to a previous partition plate;

a first partition plate in said sheath adjacent said fixed collar defining with said sheath an expansion chamber which is larger than a space between other partition plates in said sheath;

a muzzle tap (5) connected to said sheath at an opposite open end thereof and having a hole therethrough;

a first end collar engaged in said sheath having one end lying in a plane perpendicular to said axis and against said fixed collar and an opposite end lying in a plane at said acute angle to said axis, a first of said plurality of partition plates engaged against said opposite end of said collar;

a plurality of intermediate collars each having ends lying in planes at said acute angle to said axis with a plane of one end of each intermediate collar being rotated by said further angle with respect to an opposite end thereof; and

a further end collar having one end lying in a plane at said acute angle to said axis and against a last one of said partition plates along said axis, said further end collar having an opposite end lying in a plane perpendicular to said axis and against said muzzle tap whereby said muzzle tap and said fixing collar hold said intermediate and end collars as well as said partition plates together in said sheath, said first mentioned end collar defining said expansion chamber.

4,584,925

UNDERWATER ROCKET LAUNCHER AND ROCKET PROPELLED MISSILE

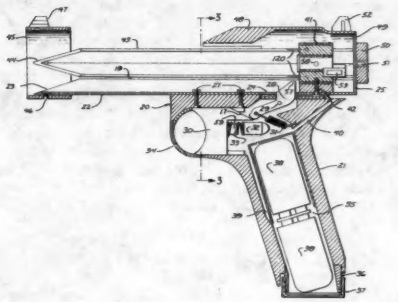
Kenneth W. Culotta, and Anthony J. Culotta, both of 1141 Willa Vista Trail, Maitland, Fla. 32751

Filed Sep. 26, 1983, Ser. No. 535,814

Int. Cl.⁴ F41B *11/10*; F41C *1/00, 9/06*; F41F *3/04*

U.S. Cl. 89—1.807 **22 Claims**

1. A hand held rocket weapon to be used as a protection against underwater marauders, comprising a pistol-like rocket launching device having a handle, a trigger adjacent the handle, and a rocket supporting body portion, said body portion having means for supporting and guiding a rocket motor propelled missile equipped with fins, said means for supporting and guiding also serving to automatically orient a missile for proper mechanical and electrical connections at the time of such insertion, and a mechanical missile restraint/release device for restraining the missile upon its insertion into said body



portion, said restraint/release device releasing the missile upon said trigger being depressed by the user, and means actuated by said trigger for causing rocket motor ignition just after such missile release.

4,584,926

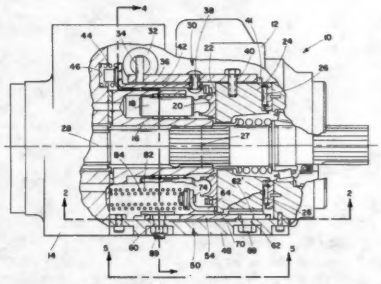
SWASHPLATE LEVELING AND HOLDDOWN DEVICE

Richard Beck, Jr., and Joseph E. Louis, both of Ames, Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 11, 1984, Ser. No. 680,439

Int. Cl.⁴ F01B *13/04*

U.S. Cl. 92—12.2 **29 Claims**



1. A swashplate centering mechanism for a variable displacement hydraulic unit comprising a housing, a cylinder block rotatable in said housing about an axial centerline and having pistons axially movable therein, a swashplate tiltable about a transverse axis perpendicular to said centerline and having a cam surface engagable by said pistons to control the stroke of said pistons within said cylinder block, said centering mechanism comprising a cam member restrained for movement along a cam axis parallel to said centerline, said cam having a pair of spaced apart swashplate contact points one disposed on each side of said transverse axis, and biasing means biasing said cam member toward said swashplate whereby both of said cam contact points contact said swashplate when said swashplate is in a zero displacement position.

23. A swashplate holddown means for a variable displacement hydraulic unit comprising a housing, a cylinder block rotatable in said housing about an axial centerline and having pistons axially moveable therein, a swashplate tiltable about a transverse axis perpendicular to said centerline, bearing means on said housing supporting said swashplate, said swashplate

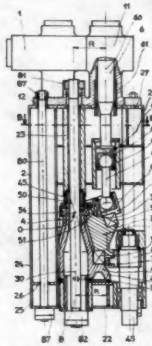
having a cam surface engageable by said pistons to control the stroke of said pistons within said cylinder block, and a displacement control means operatively connected to said swashplate by linkage means to vary the tilt of said swashplate to control the axial position of said pistons in said cylinder block, the holddown means comprising mounting means locating said displacement control means on one side of said cylinder block and permitting axial movement parallel to said centerline of said linkage means attached to said swashplate, spring means axially biasing said linkage means toward said swashplate to apply a first axial biasing force on a first side of said swashplate, and a swashplate centering mechanism located on the opposite side of said cylinder block applying a second axial biasing force on said swashplate parallel to said first biasing force and on the opposite side of said swashplate.

4,584,927

SWASH PLATE MECHANISM, PARTICULARLY FOR A PUMP DRIVE

Francis Mourrier, Autun, and Roger Badaut, Le Breuil, both of France, assignors to Creusot Loire, Paris, France

Filed Jun. 28, 1984, Ser. No. 625,768
Claims priority, application France, Jul. 1, 1983, 83 10962
Int. Cl.⁴ F01B *3/00*; F04B *1/12*
U.S. Cl. 92—71 **4 Claims**



1. A swash plate mechanism comprising

(a) a drive element (3) mounted for rotation about a longitudinal axis (30);

(b) an inclined plate (5) bearing, through the intermediary of an axial abutment (52), upon the drive element (3) and mounted for swiveling movement on the latter about an axis (50) inclined relative to said longitudinal axis (30), and intersecting the latter at a center of oscillation (0);

(c) a plurality of pistons (6) spaced about said longitudinal axis (30), mounted for sliding movement about a plurality of axes (60) parallel to said axes in cylindrical bodies (61) arranged on a frame (11) and bearing individually upon the inclined plate (5), the latter being locked in rotation;

(d) said mechanism being located inside a casing (2) bounded by two spaced end walls including a rear end wall (21) to which said frame (11) is fixed, and a front end wall (22) upon which said drive element (3) bears;

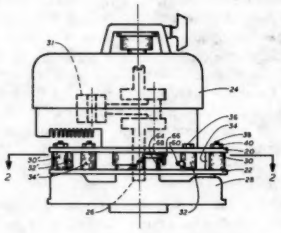
(e) said walls being interconnected by pre-loaded tie rods located within strut columns forming part of said casing, said tie rods including a central tie rod (8) located in a central strut column and extending along said longitudinal axis (30), and a plurality of lateral tie rods (80) parallel to said axis, each of said lateral tie rods being located within a lateral strut column, at least two lateral tie rods (85,86) being spaced symmetrically on each side of a corresponding radial plane (P_1) passing through the axis of the corresponding piston (6) and having a drive mechanism therebetween, each of the other tie rods being centered in a corresponding radial plane (P) passing through said longitudinal axis and through the axis of the corresponding piston (6), said central tie rod (8) and said lateral tie rods (80) bearing upon the outer faces of said walls (21, 22) and being subjected to pre-loading tension for carrying the longitudinal forces developed by said pistons, the thrust of each piston being carried cooperatively by said central tie rod (8) and the corresponding lateral tie rod (80).

4,584,928

MOTOR MOUNT

Hendrick W. Haynes, P.O. Box 66152, Seattle, Wash. 98166

Continuation-in-part of Ser. No. 163,872, Jun. 27, 1980, abandoned. This application Apr. 27, 1982, Ser. No. 378,534
Int. Cl.⁴ F01B *29/00*
U.S. Cl. 92—161 **8 Claims**



1. An engine mount for use in damping the transmission of engine vibration between an engine means (24) and an appropriate support structure (28, 72), said engine mount comprising;

a first mounting surface (20, 78) fixed to said engine means (24);

a second mounting surface (22, 80, 118) fixed to said appropriate support structure (28, 72) in a substantially parallel relation with said first mounting surface;

at least one thrust bearing means (32, 76, 132, 200) for maintaining a prefered range of separation distance 'h' between said first and second mounting surfaces;

a damping means including at least a first (30, 30', 30'') and second (34, 34', 34'') damping means having different resonant frequencies flexibly connecting said first mounting surface to said second mounting surface for reducing the transmission of vibration associated therewith from said first mounting surface to said second mounting surface;

wherein vibration and shock from said engine means (24) causes said first mounting surface to rotate and translate about an axis of said engine means relative to said second mounting surface, and said thrust bearing means (32, 76, 132, 200) provides for limited rotational and translational movement of said engine means over a prefered range of damping separation (distance 'h') between said first and second mounting surfaces, resulting in the limitation of the damping flexion potential of said damping means.

4,584,929

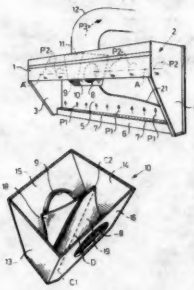
EXHAUST DEVICE

Ragnar Järmyr, and Leif Unnerholm, both of Enköping, Sweden, assignors to AB Bahco Ventilation, Enkoping, Sweden

Filed Sep. 12, 1984, Ser. No. 649,770
Claims priority, application Sweden, Sep. 19, 1983, 8305034
Int. Cl.⁴ F23J *11/00*
U.S. Cl. 98—115.1 **3 Claims**

1. An exhaust device comprising an elongated hood defined by front, top, side and rear walls, the rear wall being provided at a lower portion thereof with means to form a generally flat

upwardly directed air stream across said rear wall which is transformed into a rotational flow along an axis extending in the longitudinal direction of the hood and within an upper portion thereof, and exhaust means including a deflection casing disposed centrally between said side walls and within said upper portion, said casing being provided with a central opening communicating with an exhaust conduit and oppositely aligned suction openings on the sides thereof, said exhaust openings being disposed at about the axis of rotational



flow, whereby said upwardly flowing, generally flat air stream is transformed into two axially aligned, elongated rotational flow patterns, each of which is located between one of said suction openings and a corresponding opposed side wall of the hood, deflection means being centrally disposed within said deflection casing, said deflection means comprising two substantially rectangular plates symmetrically bent in mirror image along mutually parallel diagonal lines extending across each plate and oriented in said casing with their convex sides facing each other.

4,584,930

VENTILATION SYSTEMS FOR GLOVE BOXES

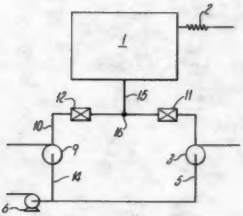
Paul A. Connolly, Seascale, England, assignor to British Nuclear Fuels Limited, Warrington, England

Filed Mar. 23, 1983, Ser. No. 477,910

Claims priority, application United Kingdom, Apr. 6, 1982, 8210123

Int. Cl.⁴ F23J *11/00*

U.S. Cl. 98—115.3 **2 Claims**



1. A ventilation system for a containment comprising a single flow line from the containment, exhaust means, a first extract line including a first vortex amplifier and first filter, a second extract line including a second vortex amplifier and second filter, said first extract line and said second extract line being disposed in parallel with first ends of said lines being connected to said single flow line exterior to the containment and the other ends of said lines being connected to said exhaust means whereby when said second extract line is operated in the reverse mode the flow is through the second filter and directly into the first extract line without first passing through the containment.

4,584,931

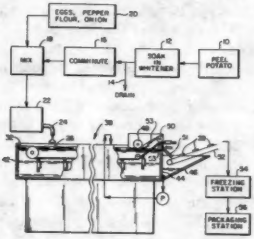
APPARATUS FOR MAKING POTATO PANCAKES

Charles A. Feehan, 8199 Walnut St., New Albany, Ohio 43054

Filed Apr. 29, 1985, Ser. No. 728,599

Int. Cl.⁴ A47J *37/12*

U.S. Cl. 99—355 **12 Claims**



1. Apparatus for frying potato pancakes comprising,

a vat having sides and two ends for holding hot cooking oil,

a moveable, segmented frying grill having upper and lower surfaces,

means for moving said grill along said vat at a level to prevent oil from rising above the upper surface and for keeping the lower surface in contact with said oil,

said moving means including roller means for turning the upper grill surface through a downward arc and gravitationally separting the grill from any objects on the upper grill surface, said roller means being located near one end of said vat,

a conveyor belt below said roller means for receiving said separated objects,

said grill including longitudinally aligned circular depressions for retaining in place those objects deposited on said grill for frying, said depressions being about 2 inches (5 cm) in diameter and about ¼ inch (0.63 cm) in depth,

means for depositing in each said depressions a mixture of comminuted potato, flour and eggs, said depositing means being located above said grill near the end of said vat remote from said roller means,

means for heating oil in said vat to a temperature sufficient to maintain the upper surface of said grill at a temperature of about 350° F. and

means for minimizing direct contact between oil in said vat and said potato mixture on said grill.

4,584,932

APPARATUS FOR HEAT-TREATING A LIQUID PRODUCT

Freerk Abma, Ed Purmerend, Netherlands, assignor to Stork Amsterdam B.V., Amsterdam, Netherlands

Filed Jan. 3, 1984, Ser. No. 567,871

Claims priority, application Netherlands, Jan. 7, 1983, 8300061

Int. Cl.⁴ A23C *3/00*

U.S. Cl. 99—455 **2 Claims**

1. Apparatus for the on-line heat-treating of a flowing liquid product wherein regenerative heat exchange is utilized and the product is briefly subjected to a high temperature comprising:

(A) a pre-heating multi-tube product temperature elevating heat-exchanger;

(B) at least one intermediate product temperature elevating multi-tube heat-exchanger, a product inlet of said heat-exchanger interconnected in series downstream from a product outlet of the pre-heating heat-exchanger (A);

(C) a high temperature multi-tube product temperature

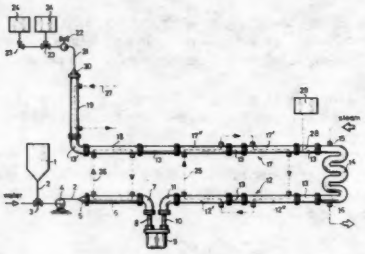
elevating heat-exchanger, a product inlet of said heat-exchanger interconnected in series downstream from a product outlet of the intermediate heat-exchanger (B); said high temperature heat exchanger being subject to an external heat supply;

(D) at least one product cooling multi-tube heat-exchanger, a product inlet of said heat-exchanger interconnected in series downstream from a product outlet of the high temperature heat exchanger (C);

(E) a complemental product cooling multi-tube heat-exchanger, a product inlet of said heat-exchanger, interconnected in series downstream from a product outlet of the cooling heat-exchanger (D);

(F) wherein heat exchangers (A), (B), (C), (D) and (E) are constructed with a flange attached at each product inlet and outlet; said flanges in combination with an exterior surface of the heat-exchanger defining a heat transfer space surrounding the tubes;

(G) a heat conduit flowpipe system for regenerative heat exchange containing an intermediate fluid with controllable flow to adjust quantity of heat transferred; said system interconnecting the heat transfer spaces of heat exchangers (A), (B), (D) and (E) with flowpipes such that the heat



transfer space of heat exchanger (A) is interconnected with the heat transfer spaces of heat exchangers (B) and (E), the heat transfer space of heat exchanger (B) is interconnected with the heat transfer space of heat exchanger (D) and the heat transfer space of heat exchanger (D) is interconnected with the heat transfer space of heat exchanger (E);

(H) multi-tube connectors each being disposed in series between two adjacent heat-exchangers for interconnecting the tubes within both heat-exchangers so that continuous extending parallel channels for the product are formed; said connectors also having an attached flange at each product inlet and outlet in the same manner as the heat-exchangers with the interior space surrounding the tubes defined by the connector flanges and exterior surface of the connector utilized to contain a heat insulating material;

(I) at least one temperature sensor, the sensor having plural contact with the respective tubes of at least that connector which is interposed between the high temperature heat-exchanger (C) and the cooling heat-exchanger (D) whereby to interact with product measuring monitoring and control means therefor.

4,584,933

ADJUSTABLE CONVEYOR TRACK FOR ICE CREAM SANDWICH MACHINE

Floyd W. Price, Freehold, N.J., assignor to Burry-Lu, Inc., Elizabeth, N.J.

Filed Nov. 23, 1984, Ser. No. 674,203

Int. Cl.[4] A21C *9/04*

U.S. Cl. 99—450.4 **8 Claims**

1. An ice cream sandwich machine comprising:

A. a linearly extended horizontal base having an infeed end and a discharge end;

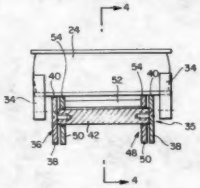
B. a vertical support communicating with said base adjacent to said infeed end;

C. a sandwich assembling station mounted on said vertical means suspended above said infeed end;

D. a sandwich indexing means located vertically below said sandwich assembling station, comprising an indexing wheel defining a plurality of circumferentially positioned pockets for receiving and transferring assembled sandwiches for horizontal conveyance; and

E. a conveyor assembly located on said base and extending from said indexing means to said discharge end, said conveyor assembly comprising,

i. movable conveyor means for receiving said sandwiches



from said indexing wheel and urging said sandwiches toward said discharge end,

ii. a plurality of lugs projecting from said conveyor means and adapted to cooperate with said indexing wheel to engage and urge said sandwiches out of said pockets, and

iii. conveyor track means disposed medially of said conveyor means, comprising a fixed conveyor track having a receiving end spaced from said index wheel to provide a drop-out zone for said removed ice cream sandwiches, and an adjustable conveyor track slidably movable with respect to said fixed conveyor track between a first position adjacent said index wheel for receiving said removed ice cream sandwiches and a second position spaced from said index wheel to expose said drop-out zone.

4,584,934

APPARATUS FOR PRODUCING A HOMOGENOUS FLEXIBLE LAYER OF MATERIAL FROM BLOCKS OF HIGHLY CONSISTENT MATERIAL, SUCH AS BUTTER OR MARGARINE

Gijsbert De Fockert, Herwijnen, Netherlands, assignor to Machinefabriek C. Rijkaart , B.V., Netherlands

Continuation-in-part of Ser. No. 457,174, Jan. 11, 1983, abandoned. This application Nov. 13, 1984, Ser. No. 670,811

Claims priority, application Netherlands, Nov. 19, 1982, 8200095

Int. Cl.[4] A01J *15/00, 17/00*

U.S. Cl. 99—462 **4 Claims**

1. Apparatus for producing an homogenous layer of flexible material from blocks of a highly consistent material, such as butter or margarine comprising:

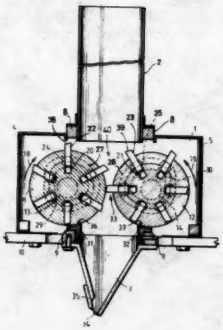
(A) an upper input portion defining a vertical chute and having two pair of substantially vertical, parallel extending interconnected sidewalls; said sidewalls defining borders of a rectangular upper input opening and a rectangular lower output opening of said input portion; one of the two pair of sidewalls being of variable separation such as to guide in close relationship in a vertical direction said blocks which are to be input into the upper opening of said input portion;

(B) a central portion defining a pump housing and having at least one pair of substantially vertical parallel extending sidewalls; said central portion having a rectangular upper inlet section arranged opposite to and in alignment with

the rectangular lower opening of said upper inlet portion, the edge of said housing inlet section in fixed coextensive contact with the edge of said lower output opening of the input portion; said pump housing also having a rectangular lower outlet section, two edges of said lower outlet section being defined by the edges of the parallel sidewalls of said central portion;

(C) a lower outlet portion defining a convergent vertical chute and having a rectangular upper inlet section arranged opposite to and in alignment with the rectangular lower output section of said central portion; the edge of said upper inlet section of the outlet portion being in fixed coextensive contact with the edge of said lower output section of the central portion; the outlet portion having two pairs of interconnected opposed sidewalls defining the border of said upper inlet section, at least one sidewall being convergant toward an opposite sidewall, the lower edges of the sidewalls defining a lower rectangular output opening of smaller parameter than the upper inlet section;

(D) a pair of elongate rotors within the central portion (B) and disposed in parallel in a substantially horizontal plane, said rotors extending longitudinally between the parallel sidewalls of central portion (B); axes of said rotors protruding through and retained by the parallel sidewalls of the central portion (B); said rotors aligned parallel to the lower rectangular output opening of the lower outlet portion (C) and also parallel to a pair of sidewalls of the



upper input portion (A); the distance between axes of said rotors being greater than the distance between said pair of sidewalls of element (A); rotors rotable by a drive mechanism in synchronus contrarotation such that the half side of each rotor that faces the opposite rotor moves in rotation away from the upper input portion (A) and thus toward the lower outlet portion (C);

(E) elongate retractable and extendable blades disposed radially within said rotors (D) and freely movable in the radial direction within radial elongate slots longitudinally disposed in the rotors; said blades extending longitudinally between the parallel sidewalls of central portion (B);

(F) guide elements fixedly attached to each opposite longitudinal end of each blade (E); said elements moving in rotation within;

(G) eccentric loop-shaped grooves disposed at each rotor end and within the inside face of the parallel sidewalls of the central portion (B); said grooves thus determining the radial extension of the blades (E) and configured as to fully extend each blade (E) as it rotates toward the vertical and facing the upper input portion (A) and maintain the blade in full extension until the blade turns past the horizontal whereupon it is fully retracted into the rotor (D); said rotor blades (E), when fully extended, just registering with the opposite rotor as said blades pass the horizontal; additionally said blades alternately intermeshing in uniform spatial separation with blades of the opposite rotor;

(H) a pair of parallel elongate scraper elements extending between the parallel sidewalls of central portion (B), each scraper disposed parallel to a rotor (D) and fixedly attached to the bottom of central portion (B); along two parallel edges of the upper inlet section of the lower outlet portion (C); said scraper elements disposed to bear against a rotor (D);

(I) a lower conveying space defined by a fully extended horizontal blade (E), the rotors (D) and slots with blades (E), the scrapers (H), the parallel sidewalls of the central portion (B) and the lower outlet portion (C).

4,584,935

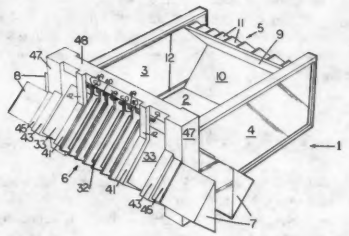
STOCK BALER

Leo J. Luggen, 5300 Hamilton Ave., Cincinnati, Ohio 45224

Filed Sep. 4, 1984, Ser. No. 647,130

Int. Cl.[4] B30B *9/30;* B65B *13/04*

U.S. Cl. 100—26 **16 Claims**



1. A stock baler comprising: a container having a bottom surface; two side walls attached upright to said bottom surface; a stationary end wall attached upright to said bottom surface, said stationary end wall having an upwardly, inwardly inclined interior surface which contacts said stock in said baler; a movable end wall positioned upright on said bottom surface having means to advance and retract said movable end wall, said movbale end wall having an upwardly, inwardly inclined interior surface which contacts said stock in said container; said inclined interior surface of said stationary end wall is positioned opposite said inclined interior surface of said movable end wall; and a pair of side rams positioned in said side walls adjacent said stationary end wall having means to advance and retract said rams, whereby stock placed into said container is compressed into a bale by moving said movable end wall toward said stationary end wall in a closed position and then moving said pair of side rams toward one another.

4,584,936

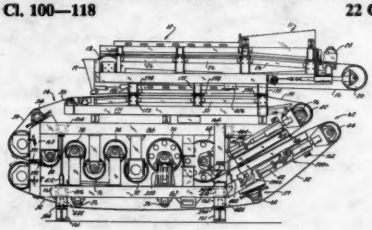
BELT PRESS FRAME

Robert E. Crandall, Greendale, and Roger B. Nickolaus, Franklin, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Dec. 11, 1984, Ser. No. 680,485

Int. Cl.[4] B30B *5/06;* B01D *33/04;* D21F *1/00*

U.S. Cl. 100—118 **22 Claims**



6. A frame, for a belt press which has a pair of endless flat

belts traveling about laterally disposed support rolls and together in a serpentine path over and under a series of squeeze rolls to squeeze excess liquid out of slurry material sandwiched between said belts, comprising:

two side frame sections, each having a pair of longitudinal beams connected to and spaced vertically apart by at least one vertical leg, and each supporting an end of said support and squeeze rolls;

a laterally extending top beam rigidly attached to the top one of said longitudinal beams on each side, and a laterally extending bottom beam rigidly attached to the bottom one of said longitudinal beams on each side;

a removable spacer in the vertical leg in one of the side frame sections;

a hinge provided in the corresponding vertical leg in the other side frame section; and

means for spreading said longitudinal beams vertically apart on said one side of the frame to permit removal of the spacer and for holding said vertical leg apart to enable the lateral removal or installation of an endless belt through the gap left by the removed spacer, whereby said hinge permits the spreading open of said one side frame section without additional stresses being imparted into the otherwise rigid frame.

4,584,937

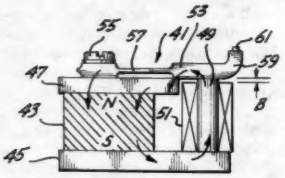
LONG RELEASE COIL HAMMER ACTUATING MECHANISM

Edward D. Bringhurst, Seattle, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Continuation of Ser. No. 558,975, Dec. 7, 1983, abandoned. This application May 3, 1985, Ser. No. 730,252

Int. Cl.[4] B41J *3/02*

U.S. Cl. 101—93.04 **2 Claims**



1. In a hammer actuating mechanism comprising a magnetic circuit formed by a permanent magnet, a flux plate, a return plate, a post and a tubular shaped release coil, said flux plate mounted on one pole of said permanent magnet such that one surface of said flux plate faces said permanent magnet and said flux plate extends outwardly from said permanent magnet, said return plate mounted on the other pole of said permanent magnet such that one surface of said return plate faces said permanent magnet and said one surface of said flux plate and said return plate extends outwardly from said permanent magnet in the same direction as said flux plate, said return plate having an outwardly extending dimension less than the outwardly extending dimension of said flux plate, said post mounted on the end of said flux plate remote from said permanent magnet, said post extending toward said return plate, the end of said post remote from said flux plate lying coplanar with the surface of said return plate facing away from said permanent magnet, said tubular shaped release coil mounted on said post, said hammer actuating mechanism including a cantilevered hammer mounted on the surface of said return plate facing away from said permanent magnet at a point in alignment with said permanent magnet, said hammer including a narrow center region extending toward the end of said post remote from said flux plate and a head aligned with both the outer end of said return plate and the end of said post, the improvement comprising:

said tubular shaped release coil being mounted on said post such that one end of said tubular shaped release coil lies adjacent to, but slightly spaced from, the end of said post remote from said flux plate, said one end of said tubular shaped release coil being located a first distance from said flux plate, said one surface of said return plate which faces said permanent magnet being located a second distance from said flux plate, said first distance being greater than said second distance;

said return plate having an outer edge with a curved shape that corresponds to the curved configuration of the curved outer surface of said tubular shaped release coil; and,

said return plate being positioned such that the outer edge of said return plate corresponding to the curved configuration of the curved outer surface of said tubular shaped release coil lies closely adjacent to, but spaced from, the curved outer surface of said tubular shaped release coil so as to surround a portion of said curved outer surface, the outer edge of said return plate having a first radius of curvature, the outer surface of said tubular shaped release coil having a second radius of curvature, said first radius of curvature being slightly greater than said second radius of curvature.

4,584,938

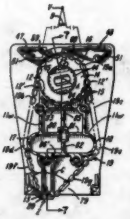
PRINT HEAD

Donald L. Karn, Springboro, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Nov. 19, 1984, Ser. No. 672,569

Int. Cl.[4] B41J *1/60*

U.S. Cl. 101—111 **12 Claims**



1. A print head, comprising: mounting means including means defining an arcuate concave mounting surface, a series of drive wheels having external teeth rotatably supported on the mounting surface of the mounting means, a series of toothed printing bands, each printing band having a series of printing characters, means for supporting a printing character of each printing band at a printing zone, direction-changing means located between the drive wheels and the supporting means, wherein the printing bands are trained about the drive wheels, the direction-changing means and the supporting means, each printing band including an engaged portion in engagement with a respective drive wheel and a pair of adjacent free portions which diverge outwardly relative to the engaged portion, and wherein the printing bands would contact the mounting means but for the divergence of the free portions caused by the direction-changing means.

4,584,939

COMBINED ROTARY PRINTING MACHINE

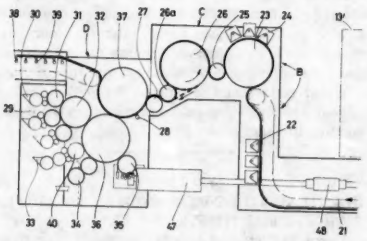
Gualtiero Giori, Lonay, Switzerland, assignor to De la Rue Giori S.A., Switzerland

Filed Jun. 21, 1984, Ser. No. 622,988

Claims priority, application Switzerland, Jul. 26, 1983, 4086/83

Int. Cl.[4] B41F 5/16, 9/02, 11/00

U.S. Cl. 101—152 8 Claims



1. Combined rotary printing machine, notably for printing fiduciary papers, which comprises a multicolor indirect printing device, an intaglio printing machine incorporating a plate cylinder inked in several colors and an impression cylinder, and a paper transfer system adapted to feed the paper printed in said indirect printing device to said intaglio printing machine, wherein:

said indirect printing device is a simultaneous recto-verso printing machine comprising a first blanket cylinder engaging a plurality of offset plate cylinders each inked by an inking unit in a different color, the number of said offset plate cylinders corresponding to the number of colors and designs of the first image to be printed on one of the paper sides, said first image being an image with superposed colors and designs, and a second blanket cylinder operating as a color collecting cylinder engaging a plurality of selective color inking cylinders and a typographic plate cylinder representing the complete design of the second image to be printed on the other side of the paper, said selective color inking cylinders, of which the number corresponds to the number of colors of the second image and of which the relief areas corresponds to the portions of said second image which are to be colored in said different colors, being each inked by an inking device in a different color and applying an image with juxtaposed colors to said collecting cylinder, said collecting cylinder inking in turn said typographic plate cylinder, a third blanket cylinder engaging said typographic plate cylinder and receiving therefrom the image with juxtaposed colors, being adapted to be pressed against said first blanket cylinder, said paper passing between said first and third blanket cylinders so as to be printed simultaneously on both sides with said first and second images, respectively;

a drying device is incorporated in said transfer system, and

a sheet transfer and turning device is incorporated in said transfer system between said drying device and said intaglio printing machine for turning said paper as required according as the paper side printed with an image with superposed colors and designs or the paper side printed with juxtaposed colors is to receive an image printed in said intaglio printing machine, wherein the intaglio printing machine is equipped with a movable inking carriage comprising a collecting inking system for several colors and at least one inking roller provided with its inking device for the direct inking of the intaglio plate cylinder, said collecting inking system comprising a collecting cylinder contacting said plate cylinder and inked in turn by several selective color inking cylinders provided each with its proper inking device, said movable carriage being replaceable by a movable carriage having a plurality of inking rollers for the direct inking in several colors.

4,584,940

INKING UNIT FOR ROTARY PRINTING MACHINE

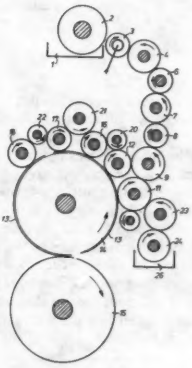
Albrecht J. Germann; Jürgen F. F. Münker, and Erich G. Wieland, all of Würzburg, Fed. Rep. of Germany, assignors to Koenig & Bauer AG, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 650,731

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1983, 3334470

Int. Cl.[4] B41F 7/36

U.S. Cl. 101—350 5 Claims



1. A single line inking unit for a rotary offset printing machine for transferring printing ink from an ink fountain to a printing plate carried on a rotatable forme cylinder and including a first dampening unit, said inking unit comprising:

at least first and second rotatably driven ink distributing rollers, a first of said ink distributing rollers receiving the printing ink from the ink fountain and transferring it to an intermediate roller positioned between said first and second ink distributing rollers, said second ink distributing roller being rotatably driven and axially shiftable;

five ink forme rollers positioned serially about said forme cylinder and each contacting said printing plate on said forme cylinder as said forme cylinder is rotated, said second ink distributing roller being in contact with first and second ones of said ink forme rollers to supply ink to said first and said second ink forme rollers;

a first rider roller positioned between and contacting said second ink forme roller and a third ink forme roller, a second rider roller contacting said third ink forme roller and a fourth ink forme roller, and a third rider roller contacting said fourth ink forme roller and a fifth ink forme roller whereby printing ink is fed from the ink fountain to said second distributing roller and is split along said ink forme rollers; and

a dampening fluid transfer roller of said first dampening unit positioned adjacent, and contacting said first ink forme roller to transfer dampening fluid to said first ink forme roller to maintain said printing ink fed to said second distributing roller and split along said five ink forme rollers at generally the same ink tack along said five ink forme rollers.

4,584,941
INK DUCT FOR PRINTING PRESSES

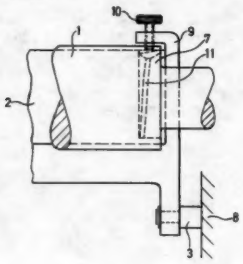
Werner Weber, Sandhausen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 6, 1985, Ser. No. 708,713

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1984, 3408183

Int. Cl.[4] B41F *31/00*

U.S. Cl. 101—350 **3 Claims**



1. Ink duct for a printing press having an ink knife forming a bottom part thereof which is adjustably movable relative to an ink-duct roller, respective ink-duct jaws being disposed at opposite sides of the ink knife and defining therewith and with the ink-duct roller an inner space for receiving a supply of ink therein, comprising a sealing surface formed on the ink-duct jaws for sealing the ink-duct jaws with the cylindrical surface of the ink-duct roller, said sealing surface being a surface in contact with the cylindrical surface of the ink-duct roller and having a width equal to part of the width of the respective ink-duct jaw, said contact surface having a spiral construction with respect to said ink-duct jaw so that a trailing end of said contact surface, as viewed in rotary direction of the ink-duct roller, faces towards the inner space of the ink duct.

4,584,942
DEVICE FOR FASTENING ONE EXTREMITY OF A SOFT AND FOLDINGPROOF BLANKET ON A CYLINDER OF A ROTARY PRINTING MACHINE

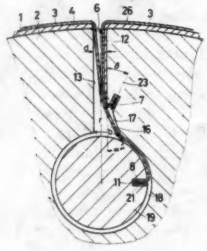
Hartmut K. Sauer, Himmelstadt, Fed. Rep. of Germany, assignor to De La Rue Giori SA, Lausanne, Switzerland

Filed Jan. 5, 1984, Ser. No. 568,364

Claims priority, application Switzerland, Jan. 18, 1983, 258/83

Int. Cl.[4] B41F *1/28*

U.S. Cl. 101—415.1 **5 Claims**



1. In combination, cylinder of a rotary printing machine and a flexible shaft mounted on said cylinder, said sheet having a folded end having a length 1, means for attaching one end of said sheet said radial slot out towards said axis of said cylinder to form a cavity which has, in the peripheral direction, a width greater than the length 1 of said folded end of said sheet, the distance between the walls of said cavity being greater than the distance between said insertion walls of said slot, one of said walls of said radial slot being provided with a longitudinal groove parallel to said axis of said cylinder for fastening said folded end of said sheet, the median plane of said walls of said radial slot located radially outwardly of said cavity being parallel to said inclined portion being divergent in relation with the other said cavity wall towards said cylinder axis, said longitudinal groove having a substantially rectangular cross-section and forming an acute angle with the portion of said wall extending outwards, said longitudinal groove located on said inclined portion of said cavity, the maximum distance between said walls of said cavity which extend outward beyond said longitudinal groove being smaller than the length 1 of said folded end of said sheet and the maximum distance between said walls of said cavity is greater than the length 1 of said folded end of said sheet.

4,584,943
MISSILE HEAD TO BE RELEASED IN AN AIRPLANE CARGO DROP OR FROM A FLYING BODY

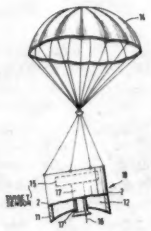
Norbert Vavra, Willich, and Jens Seidensticker, Kaarst, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 9, 1984, Ser. No. 628,751

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1983, 3324435

Int. Cl.[4] F42C *13/04*

U.S. Cl. 102—214 **3 Claims**



1. A missile head to be released in an airplane cargo drop or from a flying body, comprising a target-sensor having a receiver, a transmitter, an antenna, and an explosive charge ignitable by a target location signal, the missile head being so arranged such that the target-sensor is behind the explosive charge with respect to the flight direction, the antenna of the target-sensor being in front of the explosive charge with respect to the flight direction, and a wave carrier filled with explosives which connects the antenna to the target-sensor.

4,584,944
CONVEYOR SYSTEM WITH AUTOMATIC LOAD TRANSFER

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed Apr. 25, 1984, Ser. No. 603,596

Int. Cl.[4] B61B *3/00, 13/00*

U.S. Cl. 104—89 **14 Claims**

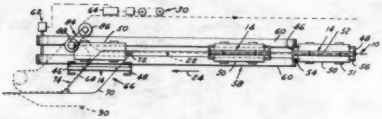
1. In a conveyor system having an overhead conveyor including a carrier track, a plurality of carriers each including a forward and a rearward trolley mounted on the carrier track, a power track positioned adjacent to the carrier track, and driven power means carried by the power track for moving the carriers along the carrier track in a forward direction, the improvement wherein:

each carrier is provided with a load supporting structure suspended from said trolleys and having forward and

rearward portions extending downwardly and adapted to be engageable with and disengageable from front and rear portions of a load in response to relative vertical movement between said carrier and load portions;

a second conveyor is arranged in longitudinally parallel relation with and is spaced vertically below said overhead conveyor at a load transfer zone, means for driving said second conveyor in synchronism with said power means of said overhead conveyor, said overhead and second conveyors having a vertical spacing which changes through said transfer zone between a greater spacing at which a load is engaged and supported by said forward and rearward portions of a carrier and a lesser spacing at which said forward and rearward portions of a carrier are disengaged from such load and such load is supported by said second conveyor;

and carrier positioning means is operative at said lesser



vertical spacing for moving a carrier laterally between an aligned position and a clearance position relative to a load, said carrier positioning means comprising

a pair of parallel carrier track portions extending obliquely relative to said second conveyor and adapted to support said forward and rearward load carrying trolleys of each carrier,

transfer power means associated with one of said parallel carrier track portions for moving each carrier therealong,

and means for driving said transfer power means in synchronism with said power means and at a speed proportional to the speed of said second conveyor and to the obliquity between said parallel track portions and said second conveyor whereby relative movement between a carrier on said parallel track portions and a load on said second conveyor is substantially confined to lateral movement.

4,584,945

LOAD-TRANSFER DEVICE AND SYSTEM

Alan W. Tupper, Castle Combe, England, assignor to Latchways Limited, London, England

Filed Jan. 24, 1984, Ser. No. 573,829

Claims priority, application United Kingdom, Feb. 2, 1983, 8302871

Int. Cl.⁴ B61B *12/02*; B63C *9/00*

U.S. Cl. 104—182 **8 Claims**

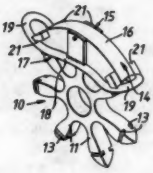
1. A load transfer device comprising:

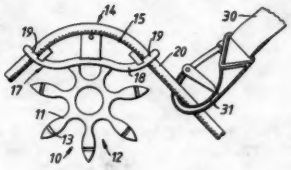
a rotatable wheel including a series of radially extending members forming a series of recesses spaced apart around the periphery of the wheel; and

a slipper part mounted on a peripheral part of the wheel to form a connected structure therewith;

the slipper part and the radially extending members of the wheel including arcuate engaging means holding the slipper part connected to the wheel while allowing rotation of the wheel relative to the slipper part;

the slipper including guide means forming a circumferentially extending, outwardly facing groove located radially outside of and curving along the periphery of the wheel to





guide an elongated member around the load transfer device.

4,584,946

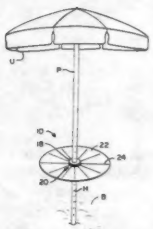
FOLDING TABLE SYSTEM

Charles L. Tucker, and Donna T. Tucker, both of 2609 Bunker Hill Rd., Woodstock, Md. 21163

Filed Sep. 18, 1984, Ser. No. 651,687

Int. Cl.⁴ A47B *37/04*

U.S. Cl. 108—50 **3 Claims**



1. In a system of folding table having a portion with means for engaging a pole of the type used substantially upright in supporting beach umbrellas, the improvement comprising: the means for engaging a pole including a hub with a bore for receiving a pole, a plurality of spokes with inner and outer ends, means for attaching each inner end to the hub pivotally from a first position with the spokes radial to the bore to a second position with the spokes upward substantially parallel with the bore, a flexible-material member supported by the plurality of spokes and forming a disc shaped table-like surface with the plurality of spokes in said first position, means for releasibly affixing the plurality of spokes in said first position and means for releasibly affixing the plurality of spokes in said second position, the means for releasibly affixing the plurality of spokes in said first position comprising a threaded portion on the hub, a radial flange on the hub adjacent the threaded portion, a nut proportioned for screwing onto the threaded portion on the hub and clamping the plurality of spokes between the nut and the radial flange and means for resisting radial forces on the disc shaped table-like surface, including the flexible material member having an inner perimeter and said

inner perimeter being clamped by the nut when the nut clamps the plurality of spokes, means for stabilizing the plurality of spokes when affixed in said first position comprising the flange having structure defining a plurality of radial grooves therein in position for receiving a portion of said plurality of spokes when clamped, means for stabilizing the plurality of spokes when affixed in said second position, comprising the hub having therein structure defining a plurality of notches parallel with the bore in position for receiving a portion of said plurality of spokes when in said second position, said flexible material member supported by the plurality of spokes including the plurality of spokes being within respective tunnels in the flexible-material member, and said flexible-material member being in the shape of a disk with a closed margin around the outer periphery guarding the outer ends of the spokes.

4,584,947

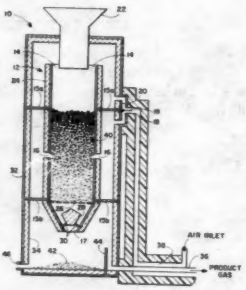
FUEL GAS-PRODUCING PYROLYSIS REACTORS

Donald E. Chittick, Rte. 2, Box 194, Newberg, Oreg. 97132

Filed Jul. 1, 1985, Ser. No. 749,990

Int. Cl.[4] F23G *5/12*

U.S. Cl. 110—229 **17 Claims**



.. A pyrolysis reactor for converting solid carbonaceous fuel to a substantially slag-free and tar-free fuel gas comprising carbon monoxide, hydrogen and methane at temperatures in excess of about 700° C. comprising:

(a) a down draft reaction chamber with walls, with two segregated down draft air inlet entrances, one of said air inlet entrances at the top of said reaction chamber and the other of said air inlet entrances in the lower portion of said reaction chamber, and with a gas outlet at the bottom of said reaction chamber;

(b) an air inlet port in communication with each of said air inlet entrances of said reaction chamber;

(c) solid fuel feed means for feeding solid fuel to said reaction chamber;

(d) an infrared radiation shield surrounding the walls of said reaction chamber;

(e) screen grate means at the bottom of said reaction chamber;

(f) an infrared radiation trap below said screen grate means;

(g) an outer jacket spaced apart from and surrounding said reaction chamber, said outer jacket having an infrared radiation shield on the inner portion thereof: and

(h) a gas exit port in communication with said gas outlet of said reaction chamber, said gas exit port having associated heat exchange means for transferring heat from gas passing through said gas exit port to air passing through said air inlet port.

4,584,948

COMBUSTORS

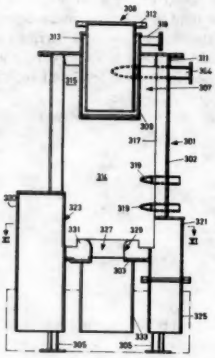
Nicholas Syred, Cardiff; Martin Biffin, Pontyclun, and Timothy C. Claypole, Dinas Powys, all of Wales, assignors to Coal Industry (Patents) Limited, London, England

Filed Dec. 4, 1984, Ser. No. 678,220

Claims priority, application United Kingdom, Dec. 23, 1983, 8334332

Int. Cl.[4] F23D *1/02*

U.S. Cl. 110—264 **56 Claims**



1. A combustor comprising a hollow circular sectioned body within which combustion is to take place in a vortical flow, the body having an inlet formed therein towards one end thereof for the introduction of a feedstock, an exhaust outlet in the body, wherein the invention comprises at least one port in the body for the entry of a combustion-promoting gas, the port being so disposed as to generate in use a vortical flow within the body, and a cylindrical catchment chamber the axis of which is arranged parallel to that of the body, the catchment chamber having its cylindrical wall relieved part circumferentially for intersection and registration with a correspondingly relieved portion of the body whereby in cross-section the walls of the body and the catchment chamber overlap in the manner of intersecting circles to provide a common boundary, in use a secondary vortex being established in the chamber and contaminant matter arising from the combustion of the feedstock passing from the body into the catchment chamber and precipitating therein for removal therefrom.

4,584,949

METHOD OF IGNITING A COMBUSTION CHAMBER WITH A FLUIDIZED BED AND A POWER PLANT FOR UTILIZING THE METHOD

Roine Brännström, Finspong, Sweden, assignor to Asea Stal AB, Västerås, Sweden

Filed Jun. 13, 1985, Ser. No. 744,173

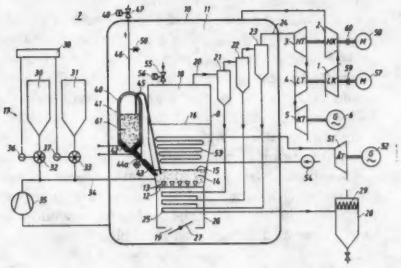
Claims priority, application Sweden, Jun. 13, 1984, 8403162

Int. Cl.[4] F23G *5/00*

U.S. Cl. 110—346 **12 Claims**

1. A method of igniting a combustion chamber in a power plant for combustion of fuel in a fluidized bed of particulate bed material which is supplied with air at the bottom of the combustion chamber for fluidization of the bed and for combustion of fuel supplied to the bed, characterized in that bed material heated to at least the self-ignition temperature of a fuel is stored in an isolated container, separated from the combustion chamber, at a level above the bottom of the combustion chamber, that heated bed material is transferred to the combus-

tion chamber via a vertical or greatly inclined conduit with a shut-off device, and that a startup fuel is supplied to said bed



material in connection with or immediately after the transfer to the combustion chamber.

4,584,950

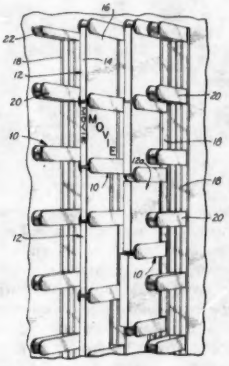
DISPLAY RACK

Jack E. Adams; Dudley D. Adams, both of Yucaipa, and Heath M. Coburn, South Redlands, all of Calif., assignors to ADCO Products, Yucaipa, Calif.

Filed Feb. 25, 1985, Ser. No. 705,228

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—41 **18 Claims**



1. A display rack that comprises:

a support member;

at least two bracket members;

said support member comprising an integrally formed elongated element having a front surface, a back surface, left and right side edges, and top and bottom edges;

said back surface of said support member including at least a portion thereof of which lies in a plane so as to be positionable against a flat support surface;

said bracket members each including a back plate and a holding element formed as an integral unit, said holding element extending from said back plate at an acute angle;

said holding element including first and second flanges located in a parallel-planar configuration with respect to each other and further including a web orthogonally located with respect to each of said first and said second flanges and extending between said first and said second flanges;

one of said support member and said bracket member including first and second channels integrally formed on said one of said support member and said bracket, said first and second channels spaced apart from one another and oriented with respect to one another so as to open toward one another;

the other of said support member and said bracket member including first and second elongated projection means, said first and said second elongated projection means sized and shaped and located in a spaced relationship on said other of said support member and said bracket member such that said first of said projection means fits in said first channel and said second of said projection means fits into said second channel;

said one of said channels or said projection means which is located on said support member being positioned on said support member so as to be parallel with the left and right side edges of said support member and said one of said channel means and said projection means which is located on said bracket member being positioned on said bracket member so as to be parallel with the plane of said flanges of said bracket member and perpendicular to said web of said bracket member;

said bracket members attaching to said support member by inserting said first and said second projection means into said first and said second channels at one of said top or said bottom edges of said support member to position said back plate of said support brackets against said face surface of said support member and further said bracket means positionable along the elongated dimension of said support member by sliding said bracket members along the elongated dimension of said support member whereby said first and said second projection means slide within said first and said second channels;

means for temporarily retaining said bracket members in a position on said support member, said means comprising a first frictional engagement means located on said front surface of said support member and a second frictional engagement means located on said back plate of each of said bracket members, said first frictional engagement means frictionally engaging with said second frictional engagement means so as to temporarily retain said bracket members in fixed positions on said support members.

4,584,951

THREAD-GUIDING ROLL

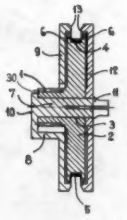
Ernst Kühnis; Armin Kobler, both of Oberriet; Max Schreiber, Arbon, and Hans Wallimann, Goldach, all of Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed May 30, 1984, Ser. No. 615,114

Claims priority, application Switzerland, Jun. 21, 1983, 3379/83

Int. Cl.[4] D05C *11/08*

U.S. Cl. 112—97 **13 Claims**



1. In a thread-guide roll for a thread supply device of a textile machine, especially for a thread brake device of an embroidering machine, wherein said thread supply device comprises a freely rotatable thread-guide roll for each thread to be selectively braked or delivered; said thread-guide roll being arranged to selectively engage and disengage a common

brake and driving shaft of the textile machine; the improvement which comprises:

the thread-guide roll having a thread friction liner;

a roll body having a substantially V-shaped annular circumferential groove;

a depression formed at the base of said V-shaped annular circumferential groove for partially accommodating said thread friction liner;

the thread friction liner being made of elastically soft material with a substantially quadrangular cross-section;

the thread friction liner protruding out of said depression into the V-shaped annular circumferential groove to define conjointly with an opposing wall of the groove a crevice; and

said thread friction liner being exchangeable.

12. A thread supply device for a textile machine. especially an embroidering machine, having a brake and driving shaft, comprising:

a thread-guide roll for each thread to be guided of the textile machine and for selectively engaging and disengaging said brake and driving shaft;

said thread-guide roll being provided with a thread friction liner;

said thread-guide roll comprising a rotatable roll body having an outer circumference;

said rotatable roll body being provided with a circumferential groove;

said thread friction liner being arranged in said circumferential groove;

two fixed guide discs;

said thread-guide roll being freely rotatably journalled between said two fixed guide discs;

said two fixed guide discs comprising a first guide disc and a second guide disc;

said first guide disc forming journal means defining elastically positive engagement means for exchangeably and freely rotatably mounting said thread-guide roll;

said second guide disc releasably positively engaging said journal means of said first guide disc for facilitating exchange of said thread-guide roll; and

said two fixed guide discs each comprising circumferentially arranged wall means extending radially beyond said outer circumference of said thread-guide roll and protruding axially toward one another over said outer circumference of said thread-guide roll to conjointly form a stationary radial continuation of said circumferential groove of said thread-guide roll.

4,584,952

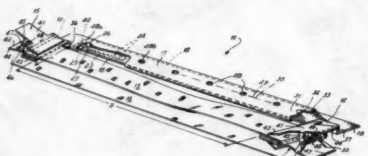
SEWING DEVICE

Dollie T. Phillips, 2327 W. McMicken Ave., Cincinnati, Ohio 45214

Filed Dec. 5, 1984, Ser. No. 678,276

Int. Cl.[4] D05B *35/00*; D06C *15/00*; B25B *5/00*

U.S. Cl. 112—148 **3 Claims**



1. A sewing device for sewing elastic to cloth, said device comprising

a pair of fingers spaced one from the other,

a slide bar connected to each of said fingers, each slide bar and finger defining a generally L-shaped configuration, said slide bars being received in telescoped relation one with the other for adjusting the distance between said fingers, said slide bars being generally positioned in one plane, and said fingers both being generally positioned in another plane, said two separate planes being parallel to but spaced one from the other,

a spring loaded pin connected to one end of one slide bars,

a series of holes throughout the length of the other of said slide bars, said holes in said other slide bar being on a line generally coaxial with the sliding axis of said slide bars, and said pin and one of said holes being engageable for holding said fingers in the desired spaced relation relative one to the other, and

a pair of spring clips, each of said clips being removably connectable with one of said fingers, each of said spring clips being adapted to hold elastic to a finger when said elastic is in the unstretched attitude, as well as when it is in a stretched attitude, without piercing said elastic.

4,584,953

NEEDLE FOR A SEWING MACHINE

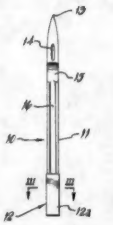
Leslie Sykes, 5 Castle Street, Edgeley, Stockport, Cheshire, England

Filed Dec. 7, 1984, Ser. No. 679,214

Claims priority, application United Kingdom, Dec. 8, 1983, 8332860

Int. Cl.[4] D05B *85/00*

U.S. Cl. 112—222 **2 Claims**



1. A needle for a sewing machine comprising a shank extending from a portion adapted to be clamped by the needle holder of a sewing machine, a point on the end of the shank remote from said portion, an eye through the shank spaced from said point and a relieved portion forming a scarf on each of opposite sides of the shank on the side of said eye opposite the point such that said scarfs are substantially symmetrical wherein an axially extending groove is provided running from the end portion remote from said point into the scarf on two sides of the needle.

4,584,954

DETECTOR FOR USE ON SEWING MACHINES

Kazuya Soyama, Nagano; Takashi Nakamura, and Yutaka Yamaura, both of Aichi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP82/00261, § 371 Date Mar. 1, 1983, § 102(e) Date Mar. 1, 1983, PCT Pub. No. WO82/02848, PCT Pub. Date Sep. 2, 1982

PCT Filed Jul. 10, 1982, Ser. No. 474,642

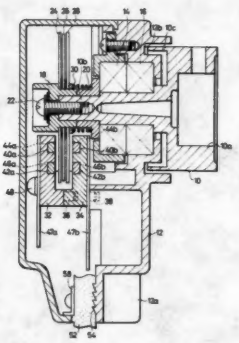
Claims priority, application Japan, Jul. 10, 1981, 56-107876; Jul. 10, 1981, 56-107877; Jul. 10, 1981, 56-107878; Jul. 10, 1981, 56-102724[U]; Jul. 10, 1981, 56-102725[U]

Int. Cl.[4] D05B *69/24*

U.S. Cl. 112—275 **9 Claims**

1. A detector for use on a sewing machine, comprising a coupling secured to an arm shaft of the sewing machine, a base supported on the coupling and having one end engaging a body of the sewing machine and held at rest in a given position, a plurality of photoelectric detector plates coaxially mounted

in axially successive layers on the coupling and slippingly rotatable thereon, said photoelectric detector plates having light shields disposed concentrically so as not to be overlapped, and light-emitting and photodetector means fixed to the base and arranged one on each side of the set of photoelectric detector plates, each of said light-emitting and photodetector means being at least two in number and mounted on one and same plane, said photoelectric detector plates being pressed axially of the coupling by presser means and each adjustable in a given angular position with respect to the coupling.



4,584,955

FINE-FEED ADJUSTING DEVICE OF A SEWING MACHINE

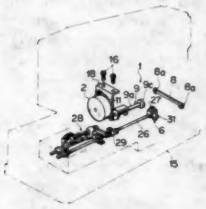
Yasuro Sano, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Oct. 19, 1984, Ser. No. 662,950

Claims priority, application Japan, Oct. 26, 1983, 58-164569[U]

Int. Cl.⁴ D05B *3/04*

U.S. Cl. 112—315 **4 Claims**



1. A fine-feed adjusting device for a sewing machine provided with a feed adjustment device actuated by means of a drive pulse motor having an output shaft and mounted to an attaching member secured to a machine frame of the sewing machine, comprising a feed adjusting member mounted on said attaching member and pivotable relative to said output shaft such that it is turned about an axis of said output shaft; a drive gear mounted on said output shaft; a follower gear meshed with said drive gear and pivotally supported at an end of said feed adjusting member; means for operating the feed adjustment device including a feed rotation shaft rotatably pivoted to the machine frame, and a feed adjusting arm secured on the feed rotation shaft; a connecting rod pivotable between said feed adjusting arm and said follower gear; and a fine-feed adjusting member rotatably supported in said attaching member and having an eccentric portion inserted in a groove formed in said feed adjusting member, said fine-feed adjusting member being rotated by an external force so as to turn said feed adjusting member to make a fine adjustment to a feed pitch.

4,584,956

ARRANGEMENT OF PATTERN INDICATION IN A PATTERN SELECTING DEVICE OF A SEWING MACHINE

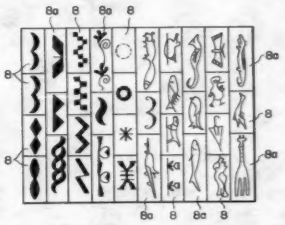
Susumu Hanyu, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 644,127

Claims priority, application Japan, Aug. 23, 1983, 58-129341[U]

Int. Cl.⁴ D05B *3/02*

U.S. Cl. 112—444 **4 Claims**



1. A pattern indication arrangement for a finger-pushing operated pattern selecting device of a sewing machine, the arrangement comprising a plurality of shorter rectangular pattern indicators; a plurality of longer rectangular pattern indicators; and means located on each of said indicators for actuating said indicators when pushed, said means including an element projected outwardly from each of said indicators, said shorter rectangular pattern indicators and said longer rectangular pattern indicators being arranged adjacent to each other in longitudinal and transverse directions of the arrangement in such a manner that the elements on the shorter pattern indicators are in alignment with each other in said longitudinal and transverse directions and the elements on the longer pattern indicators are in alignment with each other in said longitudinal and transverse directions and the elements on the shorter pattern indicators are positioned in alternating rows with the elements on the longer pattern indicators in said longitudinal and transverse directions.

4,584,957

MULTI-HULL SAILING VESSEL WITH VARIABLE LIFT

Mark S. Belvedere, 18126 Strathern St., Reseda, Calif. 91335

Filed Jan. 16, 1984, Ser. No. 570,983

Int. Cl.⁴ B63H *9/04*

U.S. Cl. 114—39 **26 Claims**

1. A multi-hull sailing vessel comprising:

(a) a hull structure comprising:

(i) a main hull;

(ii) an auxiliary hull; and

(iii) connecting arms connecting the auxiliary hull to the main hull;

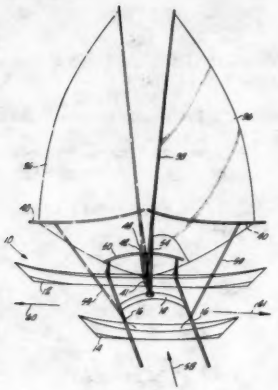
(b) a linear track on each connecting arm, the auxiliary hull being movably mounted on the tracks;

(c) means for moving the auxiliary hull along the linear tracks for changing the distance between the main hull and the auxiliary hull;

(d) a mast for supporting a sail, the mast having a base;

(e) a mast mounting track on the main hull on which the base of the mast is slideably and pivotally mounted for varying the angle of the mast relative to the water surface to control the upward lifting force of wind on the vessel;

(f) rigging for moving the mast along the mast mounting track; and



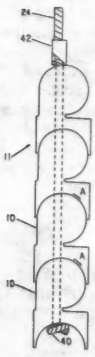
(g) a strut supporting the mast, the strut being moveably mounted to the mast and movably supported by the hull structure so the mast can slide and pivot, the base of the strut being laterally spaced apart from the main hull.

4,584,958

BOAT BUMPER

David A. Green, P.O. Box 359, Hawkestone, Ontario, Canada (L0L 1T0)

Filed Feb. 23, 1983, Ser. No. 468,913
Claims priority, application Canada, Jan. 12, 1983, 419298
Int. Cl.[4] B63B *59/02*
U.S. Cl. 114—219 **2 Claims**



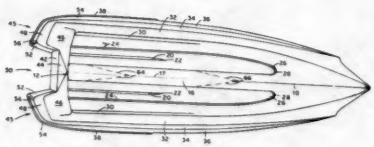
1. A bumper unit for protecting the hull of a boat comprising a one-piece bumper body of resilient, deformable non-metallic material, said body having a curved male portion and a socket portion, each of which has a width at least substantially equal to its length extending in the longitudinal direction of the unit, said male portion having a peripheral surface forming a partial cylinder extending through an arc of at least 270 degrees but less than 360 degrees, said peripheral surface extending to a point near the middle of an adjacent end of said socket portion, said socket portion having a semi-cylindrical cavity with a radius substantially equal to the radius of said partial cylinder, said cavity being open on two opposite sides of the unit and located a short distance from the male portion relative to the length of the unit, said socket portion having four flat exterior sides extending in the longitudinal direction of the unit, and passage means extending lengthwise of said body and including a narrow bore portion extending through the transverse center of said socket portion and partway through said male portion and a wide slot portion in a section of the male portion furthest from said socket portion, said slot portion opening into said partial cylinder across an arc of at least 90 degrees, wherein said passage means is adapted for passage of a rope to connect said unit to a similar bumper unit.

4,584,959

PLANING BOAT HULL

Darris E. Allison, Rte. 3, Box 771, Louisville Rd., Louisville, Tenn. 37777

Filed May 25, 1984, Ser. No. 614,456
Int. Cl.[4] B63B *1/18*
U.S. Cl. 114—288 **13 Claims**



1. In a modified V-hull for a boat, the improvement comprising:

an elongate pad having a generally rectangular shape and having a length and a width, said pad being disposed in the center of said hull with the length of said pad extending parallel to the length of said hull from about the back toward the front of said boat, said pad forming the lowermost portion of the modified V-hull;

said pad at positions toward the front of said pad having a transverse cross-sectional non-linear V-shape across its width with the point of the "V-shape" being in the center of the hull and defining a longitudinal center of said hull;

said pad having a substantially flat transverse cross-section at the back of said pad;

said pad having a gradually increasingly acute V-shape in transverse cross-section from the back to the front of said pad;

said pad being configured to have linear tracks extending from the center of said pad rearwardly at a track angle with respect to the longitudinal center of said pad; and

said track angle remaining approximately constant from the back to the front of said elongate pad.

4,584,960

HIGH RESOLUTION VEHICLE CONTROL SYSTEM

Arthur K. Colling, Jr., Monson, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 566,002
Int. Cl.[4] B63G *8/22*
U.S. Cl. 114—333 **8 Claims**

1. In a vehicle including a chamber, the pressure of a gas contained within said chamber determining atmospheric conditions experienced by said vehicle and being controlled by the select flow of said gas from a source thereof to said chamber, and discharge of said gas from said chamber, through control valve means in fluid communication with the interior of said chamber, control apparatus characterized by:

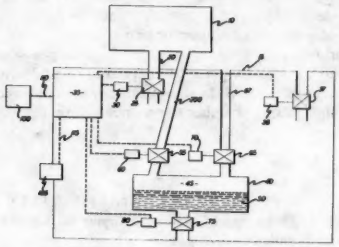
an absolute pressure sensor providing a first signal indicative of the absolute pressure of said atmosphere;

means providing a reference sample of a desired atmospheric pressure experienced by said vehicle interiorly thereof;

a differential pressure sensor providing a second signal indicative of the difference in pressure between said sample and said atmosphere at conditions varying from said desired atmospheric conditions; and

signal processing means responsive to said first signal for

providing actuation signals to said control valve means as a function of the difference between said first signal and a desired reference pressure of said atmosphere to set a control pressure within said chamber within a range of said reference pressure, said signal processing means also



being responsive to said second signal for providing actuation signals to said control valve means as a function of said second signal to set a pressure within said chamber to reestablish said atmospheric pressure at said control pressure thereof from unwanted excursions from said control pressure.

4,584,961

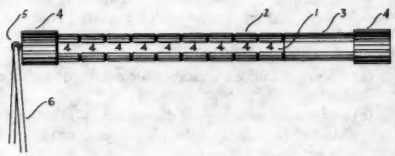
GOLF SCORING DEVICE

Ronald Zimmer, 115 N. Benton Rd., West Frankfort, Ill. 62896

Filed Aug. 25, 1983, Ser. No. 526,360

Int. Cl.[4] A63B *57/00*

U.S. Cl. 116—223 **3 Claims**



1. A gold scoring device comprising an elongated cylindrical body member having a first section and a second section said first section being of lesser diameter than said second section whereby a shoulder is formed between said sections,

a plurality of numeral sets each being printed circumferentially around the outer surface of said first section, said numeral sets being longitudinally spaced along said first section so that like numerals of each set are aligned.

a plurality of snap rings arranged side-by-side on said first section, each of said snap rings being of part circular cross section with circumferentially spaced ends defining an opening therebetween, the snap rings resiliently embracing said first section of said body member for frictional rotation thereon, each snap ring covering one of the numeral sets except for a single numeral of the set which is exposed in the respective snap ring opening, whereby rotation of each ring is effective to expose a selected numeral of a respective set of said numeral sets to indicate a golfer's score for a selected hole,

an end cap provided on an end of said first section opposite said shoulder whereby said plurality of snap rings are held in abutting relationship on said first section between said shoulder and said end cap.

4,584,962

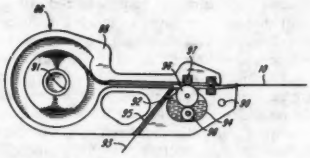
MEDICAL ELECTRODES AND DISPENSING CONDITIONER THEREFOR

James V. Cartmell, Dayton, Ohio, assignor to NDM Corporation, Dayton, Ohio

Division of Ser. No. 447,423, Dec. 6, 1982, Pat. No. 4,543,958, which is a continuation-in-part of Ser. No. 246,873, Mar. 23, 1981, which is a continuation-in-part of Ser. No. 34,394, Apr. 30, 1979, Pat. No. 4,257,424. This application Nov. 15, 1984, Ser. No. 671,856

Int. Cl.[4] B05C *11/00, 13/00, 13/02, 1/00*

U.S. Cl. 118—43 **13 Claims**



1. In a mechanism for conditioning medical electrodes initially equilibrated with a room temperature atmosphere whose relative humidity is in the range 30% to 60% and integrally connected end-to-end to form a strip of such electrodes, the combination comprising a housing, a chamber within said housing for receiving said strip of electrodes, said housing having a discharge opening, said housing having means defining a slot extending from said chamber to said discharge opening for guiding said strip from said chamber through said discharge opening where an operator can grasp said strip to move said strip outwardly of said housing from said discharge opening, and means for controlling the moisture content of the electrodes moved through said discharge opening.

4. The mechanism of claim **1** wherein said strip is perforated where said electrodes are joined end-to-end, wherein said housing has shelf means disposed outwardly of said discharge opening, and wherein said shelf means supports a tooth for entering the perforation located between an electrode overlying said shelf means and an adjacent electrode disposed outwardly of said shelf means.

5. The mechanism of claim **4** wherein said shelf means has a separation edge from which said tooth projects and along which said outwardly projecting electrode may be torn from the adjacent electrode overlying said shelf.

4,584,963

SYSTEM FOR REPAIRING JOINTS IN PIPES LAID UNDERGROUND

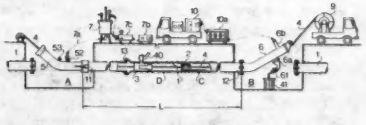
Akio Morinaga, Fujisawa; Mitsutoshi Hayashi, Tokyo, and Motoyuki Koga, Tokyo, all of Japan, assignors to Tokyo Gas Co., Ltd. and Hakko Co., Ltd., both of Tokyo, Japan

Filed Dec. 24, 1984, Ser. No. 685,284

Claims priority, application Japan, Dec. 28, 1983, 58-246621

Int. Cl.[4] B05C *11/00, 11/02, 1/00*

U.S. Cl. 118—663 **5 Claims**



1. A system for repairing pipes laid underground in which the pipe is divided into sections of certain lengths, into which the resin and a pig for pushing it along the pipe section are inserted from the opening end so that gaps in numerous joints

inside of the pipes are filled with the resin in the process of moving the resin by the drag of the pig, characterized by

a pig, the work of which is to substitute the resin for substances such as air, provided on its periphery with filling channels of which the opening end opens onto the front of the pig's direction of motion, and escape channels opening onto the rear of the pig's direction of motion, the two channels being separated circumferentially but overlapping each other longitudinally against the direction of motion,

the resin being supplied ahead of the pig, and an air supply means provided to supply a certain air pressure in the front of the pipe in the pig's direction of motion, so that

in the process of pushing the resin by said pig, when the pig passes a pipe joint, the resin is forced into gaps in the pipe joint through the filling channels for the resin of said pig due to the frontal air pressure acting on the resin and the pressure in the resin caused by the movement of the resin itself, while the substance to be replaced among the sealing material and gaps in the joints is expelled to the rear of the pig's direction of motion through said escape channels, to ensure infiltration and saturation of the resin into the sealing material through gaps in the pipe joints whether or not the pipe joint has developed a leak.

4,584,964

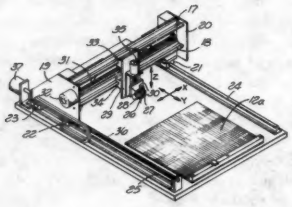
VISCOUS MATERIAL DISPENSING MACHINE HAVING PROGRAMMED POSITIONING

Harold J. Engel, 18932 Olympia St., Northridge, Calif. 91326

Continuation of Ser. No. 560,590, Dec. 12, 1983, abandoned. This application Sep. 30, 1985, Ser. No. 782,182

Int. Cl.[4] B05C *00/00*

U.S. Cl. 118—697 **9 Claims**



1. A machine for accurately and selectively depositing a viscous material at predetermined locations on a surface, comprising:

first means including a nozzle and a closed reservoir for containing said viscous material under predetermined pressure;

second means including a controllable valve assembly and a fluid conduit in series between said nozzle and said reservoir, said valve assembly being responsive to a flow control signal for correspondingly controlling emmission of said viscous material;

third means including a servomechanism for positioning said nozzle with respect to said surface in response to position control signals;

fourth means including a programmable controller for generating and applying said position control signals to said servomechanism in a sequence corresponding to a predetermined program extant in said controller;

fifth means within said second means comprising a valve assembly housing, an axially operative poppet valve within said housing and connected to said fluid conduit at its input side, an axially operative solenoid for opening said valve in response to said flow control signals and a chamber within said housing between the output side of said poppet valve and said solenoid, said nozzle being connected to said chamber, said poppet valve having a stem projecting axially at its output side and said solenoid having a core pin projecting axially toward said poppet stem and contacting and axially translating said stem to open said poppet valve when said solenoid is energized by said flow control signal;

sixth means comprising a resilient diaphragm at the end of said chamber adjacent said solenoid forming at least a portion of the wall of said chamber, said resilient wall deflecting to decrease the volume of said chamber in response to operation of said solenoid;

and first spring means arranged to restore said resilient wall to its position prior to energizing of said solenoid when said solenoid is de-energized thereby to increase the volume of said chamber to produce a draw-back effect at said nozzle.

4,584,965

PLASMA TREATING APPARATUS

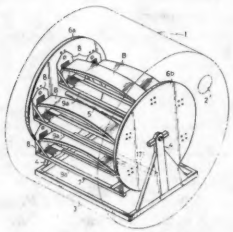
Yasuhiko Ogisu, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Dec. 11, 1984, Ser. No. 680,511

Claims priority, application Japan, Dec. 15, 1983, 58-236546

Int. Cl.[4] C23C *16/00*

U.S. Cl. 118—730 **7 Claims**



1. A plasma treating apparatus for treating articles such as bumpers of synthetic resins with a plasma gas to activate the surfaces of said articles before the same are painted, comprising:

(a) a body defining a chamber for accommodating said articles;

(b) a plasma injection pipe disposed in said accommodating chamber for injecting the plasma gas onto the surfaces of said articles;

(c) a pair of rotatable supporting members juxtaposed in said accommodating chamber to each other and made rotatable on an axis; and

(d) at least one supporting bed supported between said rotatable supporting members for supporting said articles.

4,584,966

LIVESTOCK WATERING SYSTEM

James G. Moore, 911 Timberdell, Norman, Okla. 73069

Filed Apr. 1, 1985, Ser. No. 718,566

Int. Cl.[4] A01K *7/02*

U.S. Cl. 119—73 **26 Claims**

1. An improved livestock watering system comprising:

a housing having an upper end portion, a lower end portion and a continuous sidewall;

a drinking basin supported by the upper end portion of the housing;

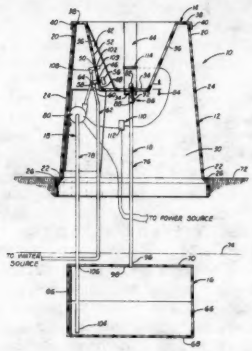
flow control valve means disposed within the drinking basin and in fluid communication with a pressurized water source for maintaining water in the drinking basin;

a reservoir adapted to hold a supply of water;

water circulation means connected to the drinking basin and the reservoir for circulating water therebetween; and

temperature sensing means for sensing the temperature of

the water in the drinking basin and for selectively activating the water circulation means to circulate water between the reservoir and the drinking basin in response to the temperature of the water in the drinking basin.



4,584,967

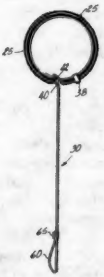
PET COLLAR/LEASH

Patricia A. Taplin, 1404 Biscaya Dr., Surfside, Fla. 33154

Filed Mar. 7, 1985, Ser. No. 709,214

Int. Cl.[4] A01K *27/00*

U.S. Cl. 119—109 **4 Claims**



1. A collar/leash combination for pets, comprising:

A. a flexible flat member having outer and inner surfaces and further including buckle means on one end having a frame and a locking pin that pivots on said frame and said pin being insertable through said flexible member so that a collar may be formed by passing the other end of said member through said buckle; and

B. means for keeping in place said flexible member including Velcro material of one type on said outer surface's section of said member that is formed into a collar and the rest of said outer surface having Velcro material of the opposite type, and said inner surface of said member having Velcro material of the same type used on said outer surface's collar section.

4,584,968

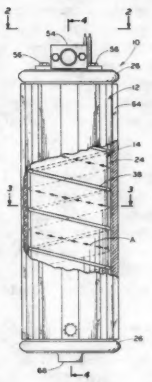
CYLINDRICAL BOILER

Alfred J. Farina, Baldwin, N.Y., assignor to Thermocatalytic Corporation, Williston Park, N.Y.

Filed Jul. 22, 1985, Ser. No. 757,484

Int. Cl.[4] F22B *5/00*

U.S. Cl. 122—14 **2 Claims**



1. A boiler for a radiant heated water system comprising a pair of concentrically arranged outer and inner open-ended cylindrical shells defining therebetween a chamber for holding water, a cap closing each end of said pair of cylindrical shells and removably secured thereto, an inlet for the supply of water to said chamber extending through the outer shell at one end and an outlet for the discharge of water therefrom at the other end, a combustion element extending into the inner shell from said other end providing a source of heat radiating outwardly therefrom against the inner shell, a continuous elongated helically wound wire arranged between said shells, in abuttment with each wall dividing said chamber into a continuous helical passage from said inlet to said outlet, and a plurality of longitudinally extending ribs on the interior surface of said inner shell to facilitate heat transfer from said combustion element to water flowing in said chamber between said shells.

4,584,969

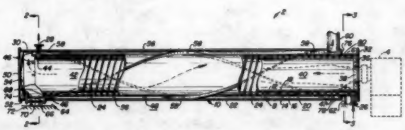
DIRTY WATER HEAT EXCHANGER

William G. Urbani, 2520 Benjamin Holt Rd., Stockton, Calif. 95207

Filed Sep. 25, 1984, Ser. No. 654,612

Int. Cl.[4] F22B *7/00, 31/02*

U.S. Cl. 122—136 R **9 Claims**



1. A heat exchanger, for use with a burner which produces hot gases, comprising:

a cylindrical furnace duct having a first end connected to the burner for receipt of the hot gases and an open second end, said furnace duct defining a heater chamber therein;

said furnace duct including a spiral liquid heating path surrounding at least a part of said heater chamber, said spiral path having a liquid inlet and a liquid outlet;

an exhaust tube spaced apart from and surrounding at least a

portion of the length of said furnace duct to define an exhaust gap therebetween, said exhaust tube having first and second ends, said second exhaust tube end being closed and surrounding said second furnace end to direct hot gases from said heater chamber, past said furnace duct second end and into said exhaust gap, said first exhaust tube end having an exhaust gas outlet, whereby the hot gases make a double pass and the heated liquid makes a single pass through the heat exchanger;

means for mounting said furnace duct and said exhaust tube to one another, said mounting means securing said furnace duct to said exhaust tube at no more than one axial position to accommodate differential expansion between the furnace duct and the exhaust tube;

a stationary mount secured to said first furnace duct end and a sliding support secured to said second exhaust tube end to accommodate differential axial expansion and contraction of said heat exchanger; and

a slip joint mounting means allowing relative axial movement between said furnace duct and said exhaust tube, including radially oriented and axially extending spacer plates secured to one of said furnace duct and exhaust tube; and

means for supporting said heat exchanger in a chosen position.

4,584,970

CYCLIC SOLID GAS REACTOR

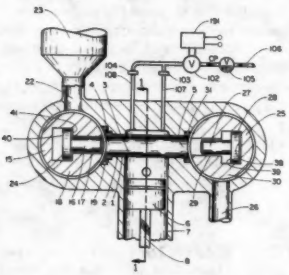
Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Filed Mar. 9, 1983, Ser. No. 473,566

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.[4] **F02B** *45/02;* **F02D** *19/04*

U.S. Cl. 123—23 **28 Claims**



1. A cyclic reactor plant for contacting at least one solid reactant with at least one gas reactant and comprising at least one cyclic reactor machine, said cyclic reactor machine comprising:

at least one separate solid reactant supply sources;

at least one separate first reactant gas supply sources;

at least one reaction chambers, each said reaction chamber comprising, containing means for containing solid reactants so that gases may be compressed into contact with said solid reactants and so that gases may be expanded away from said solid reactants, each said containing means comprising a refill end and a removal end, said containing means further functioning so that fresh solid reactant can be added into said containing means via said refill end and so that non-gaseous products can be removed from said containing means via said removal end, and so that solid reactants and non-gaseous products are elsewhere contained within said containing means;

a compressor means comprising:

means for compressing gases into said reaction chambers and means for expanding gases out of these same reaction chambers so that each compression process is followed by a single expansion process and these two steps together constitute a single cycle of compression and expansion, and so that said cycles of compression and expansion follow one another in succession in a sequence of a number of cycles, and so that said number of cycles in each sequence of cycles is at least one;

a first reactant gas inlet pipe comprising an inlet and an outlet;

means for delivering gases into said compressor means from said outlet of said first reactant gas inlet pipe, such delivery being a delivery process, and comprising means for initiating said means for delivering gases so that a single said delivery process is carried out by said means for delivering gases whenever initiated by said means for initiating, and so that each said sequence of cycles is followed by a delivery process and so that each said delivery process is followed by the next sequence of cycles of compression and expansion;

power means for driving said compressor and for absorbing any power output; means for sealing said delivery means during all compression and expansion processes; means for connecting said compressor means into said reaction chambers; means for connecting said first reactant gas inlet pipe at outlet to said means for delivering;

reactant supply means for connecting the inlet of said first reactant gas inlet pipe of said compressor means to said first reactant gas supply source;

at least one refill means for adding fresh solid reactant at intervals into each of said containing means via said refill end thereof, said interval being the refill interval, said adding of solid reactant being a refill process, each said refill means comprising, a refill mechanism means for adding fresh solid reactant into said containing means, refill drive means for driving said refill mechanism through a refill process, means for initiating said refill drive means to drive said refill mechanism through a refill process so that a single said refill process is carried out by said refill mechanism whenever said refill drive means is initiated by said means for initiating, means for sealing said refill end of each of said containing means during compression and expansion processes;

at least one reload means for reloading fresh solid reactant from at least one solid reactant supply source into each of said refill means after each refilling is completed, so that any one said containing means is refilled with solid reactant from the same at least one of said solid reactant supply sources, and so that from each of said number of solid reactant supply sources refilling occurs into at least one of said containing means;

at least one removal means for removing non-gas products from each of said containing means via said removal end thereof, and for sealing said removal end of each of said containing means during said compression and expansion processes, and for dumping said removed products outside said cyclic reactor machine;

means for setting said refill interval by setting the number of cycles in each refill interval operative upon said means for initiating said refill drive means of said refill mechanisms so that each said refill means is driven through a single refill process for adding fresh solid reactant into said containing means, at the end of said refill interval;

sequence means for setting the number of cycles in each sequence of cycles of compression and expansion operative upon said means for initiating said means for delivering so that a delivery process is carried out at the end of each said sequence of cycles, said sequence means comprising; a cycles counter means for counting cycles, an actuator means operative upon said means for initiating said means for delivering so that a delivery process is carried out when said cycles counts equal a set value of cycles counts, means for resetting said cycles counter means to start counting cycles again next after each said delivery process is completed with said set value of cycles counts being at least two for at least one sequence.

4,584,971
EVAPORATIVE COOLING SYSTEM FOR INTERNAL COMBUSTION ENGINES

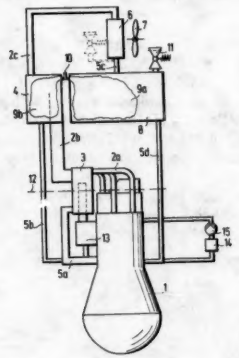
Alfred Neitz, Wendelstein, and Wolfgang Held, Schnabelwaid, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg, Oberhausen, Fed. Rep. of Germany

Filed Oct. 18, 1984, Ser. No. 662,262

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1983, 3339717

Int. Cl.[4] F01P *3/22*

U.S. Cl. 123—41.21 **9 Claims**



1. A cooling system for an internal combustion engine in which cooling is effected by evaporation of a coolant comprising:

cooling means in which the vapor or steam is subsequently reliquified by the removal of heat;

a surge tank connected downstream of said cooling means and provided with a flexible bladder therein which communicates with the atmosphere;

the flexible bladder contacting the inner surfaces of the surge tank in the cooled-down condition of the internal combustion engine, the internal combustion engine having a cooling jacket sub-divided into several units;

the cooling system also including control means for maintaining approximately a desired coolant level in each cooling unit at substantially all times.

4,584,972
DYNAMIC COMPRESSION INTERNAL COMBUSTION ENGINE WITH YOKE HAVING AN OFFSET ARCUATE SLOT

Michael E. Jayne, 1 River St., Belchertown, Mass. 01007; Peter D. Anderson, 27 High Point Dr.; James T. Hoffman, 260 Grantwood Dr., both of Amherst, Mass. 01002, and Robert B. Gray, 71 Gulf Rd., Belchertown, Mass. 01007

Filed Dec. 21, 1984, Ser. No. 684,576

Int. Cl.[4] F02B *75/32*

U.S. Cl. 123—56 C **14 Claims**

1. Apparatus for an internal combustion engine having at least one cylinder with a first axis and an attendant crankcase with crankshaft mounted therein for rotation of a throw of the crankshaft, comprising

a piston disposed in the cylinder for movement along the first axis,

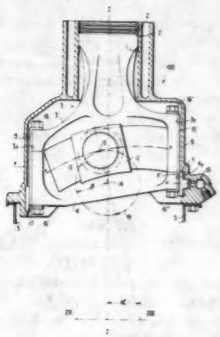
a yoke connected to the piston for movement along the first axis,

a sliding block to engage said yoke,

the yoke and sliding block comprising

means for effecting asymmetrical compression and power stroke time periods having

at least a curved surface on said yoke engaging throughout the compression and power stroke time periods a mating surface on the sliding block, said curved and mating surfaces having only a single center of curvature disposed remote from the crankshaft on a side of the crankshaft which faces away from the piston and the curved surface



being disposed with respect to the first axis to afford a greater time period for fuel burn during a power stroke than that for a compression stroke, wherein top dead center of said sliding block occurs after that of said piston.

4,584,973
INTERNAL COMBUSTION ENGINE

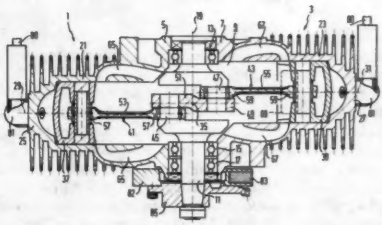
Kurt Diuhosch, and Fred Meister, both of Schweinfurt, Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 28, 1984, Ser. No. 675,769

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1983, 3343876

Int. Cl.[4] F02B *75/24*

U.S. Cl. 123—56 BA **5 Claims**



1. An internal combustion engine comprising:

(a) a crankcase,

(b) a crankshaft mounted within said crankcase for rotation about an axis of rotation,

(c) at least one pair of cylinder housings mounted on the crankcase, the cylinder axes of which are offset in angle in relation to one another about the axis of rotation,

(d) cylinder heads which close the cylinder housings on their sides remote from the crankcase,

(e) a piston in each of the cylinder housings, and

(f) connecting rods connecting the pistons with the crankshaft, the improvement being that

(g) the crankcase is divided into two crankcase halves in a plane of separation which includes the axis of rotation and bisects the angle between the cylinder axes,

(h) in each case one of the two crankcase halves, one of the cylinder housings of each pair and the cylinder head of

this cylinder housing of each pair are integrally connected with one another in the form of a one-piece casting, and

(i) that the two castings have cast surfaces or like form which are at 180° in rotational symmetry to one another in relation to an axis of symmetry lying in the plane of separation and perpendicular to the axis of rotation of the crankshaft,

(j) the crankshaft comprises between two crankshaft bearings, two adjacent cranks interconnected by a middle piece, for each pair of pistons, the middle piece being cranked to reduce the distance between the cylinder axes of the cylinder housings of the piston pair,

(k) and the connecting rods of each piston pair comprise between their bearing eyes, rod parts eccentrically offset away from the middle piece, in relation to the bearing eyes.

4,584,974

VALVE OPERATION CHANGING SYSTEM OF INTERNAL COMBUSTION ENGINE

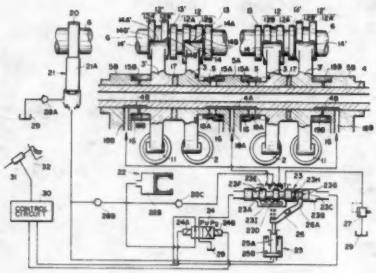
Shunichi Aoyama, Yokosuka, and Manabu Kato, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 18, 1983, Ser. No. 514,687

Claims priority, application Japan, Jul. 27, 1982, 57-113690[U]; Dec. 29, 1982, 57-233593; Jan. 12, 1983, 58-2326[U]

Int. Cl.⁴ F01L *1/34*

U.S. Cl. 123—90.16 **33 Claims**



1. A valve operation changing system of an internal combustion engine, comprising:

first and second cams (**12**, **13**; **45A**, **45B**) formed on a camshaft (**6**) and different in cam profile from each other;

a rocker arm (**3**, **3'**) mounted on a rocker shaft and swingable around the rocker shaft to operate an engine valve (**2**, **11**) upon engagement with said cams, said rocker arm (**3**, **3'**) being axially movable to engage with said first cam (**12**, **45A**) when said rocker arm is put in a first position while with said second cam (**13**, **45B**) when said rocker arm is put in a second position; and

means (**21**, **22**, **23**, **19A**, **19B**, **24**, **25**, **26**) for selectively putting said rocker arm in one of said first and second positions in accordance with an engine operating condition, said putting means including

an oil pressure source (**21**) for supplying pressurized hydraulic oil,

a flow direction changing valve (**23**) fluidly connected to said oil pressure source and arranged to selectively take one of its first and second states,

means defining first and second hydraulic pressure chambers (**19A**, **19B**; **50***a*, **51***a*) which are fluidly connectable with said oil pressure source through said flow direction changing valve, said first hydraulic pressure chamber (**19A**; **50***a*) being suppliable with the oil fed through said flow direction changing valve so as to put said rocker arm into the first position when said flow direction changing valve is in the first state, said second hydraulic pressure chamber (**19B**; **51***a*) being suppliable with the oil fed through said flow direction changing valve so as to put said rocker arm into the second position when said flow direction changing valve is in the second state,

stopper means (**26**) controlling position of said flow direction changing valve to restrict the axial movement of said rocker arm; and

means (**25**) for releasing said flow direction changing valve from position control of said stopper means in timed relation to the rotation of said first and second cams when actuated, whereby the movement of said rocker arm between the first and second positions takes place in timed relation to the rotation of said first and second cams.

4,584,975

OIL DRAIN ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

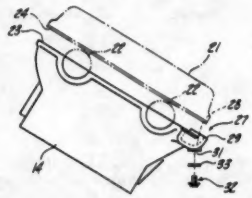
Masatoshi Ohmi, and Junkichi Amano, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed May 15, 1985, Ser. No. 734,477

Claims priority, application Japan, May 16, 1984, 70365[U]

Int. Cl.⁴ F01L *11/04*

U.S. Cl. 123—90.38 **7 Claims**



1. In an internal combustion engine having a cylinder head supporting a plurality of valves and a valve actuating mechanism, a cover affixed to said cylinder head and enclosing said valves and said valve actuating mechanism, and a sealing surface formed between said cylinder head and said cover, the improvement comprising a drain gutter formed in said cylinder head outside of said sealing surface and adapted to collect and retain lubricant passing from beyond said sealing surface.

4,584,976

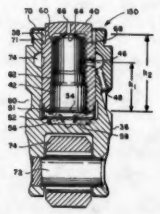
RESERVOIR HEIGHT EXTENDER FOR LASH ADJUSTER ASSEMBLY

George A. Hillebrand, Battle Creek, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 20, 1985, Ser. No. 746,708

Int. Cl.⁴ F01L *1/24*

U.S. Cl. 123—90.55 **8 Claims**



1. An improved fluid operated lash adjuster assembly for preventing back lash in of an internal combustion engine valve member drive train, said assembly including a body member mounted on the engine, said body member having a bore therein having an open end and a closed end surrounded by a

wall thereof having a first fluid passageway therethrough communicating between the body member bore and a source of fluid, a plunger member moveably disposed within said body member bore and having a fluid resevoir therewithin whose capacity is defined by the height of a second fluid passageway through a side wall thereof surrounding said chamber for receiving fluid from the first passageway, said assembly having a fluid pressurization chamber between said resevoir and said body member closed end and including one-way valve means beetween said resevoir and said pressurization chamber operable to cyclically pressurize fluid from the resevoir in response to reciprocating movment of the plunger member in response to rotation of a rotary cam member driven by the engine, wherein the improvement is characterized by said plunger member including an inverted hollow insert member disposed within said plunger member chamber, said insert member having an open-end thereof facing toward the closed end of the body member bore surrounded by a periphery of the insert member that is secured in fluid tight sealing engagement with the wall of the plunger member surrounding the chamber below the location of said second fluid passageway, said insert member having a generally closed upper-end above said second fluid passageway having at least one fluid entrance opening therethrough providing fluid communication between said plunger member chamber and said resevoir, and said insert member having a side wall thereof displaced from the plunger member wall surrounding the chamber sufficiently to provide a third fluid communicating passageway between the second fluid passageway and said insert opening enabling fluid to flow from the second passageway through the insert opening and into the resevoir enabling the resevoir to rise within said insert member above the location of the second fluid passageway thereby enlargening capacity of the resevoir and enhancing operation of the assembly.

4,584,977

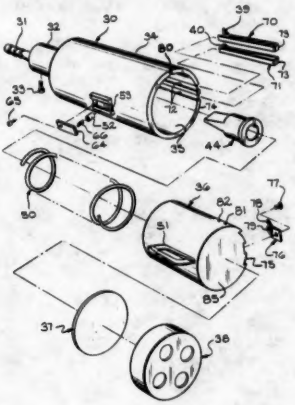
LOW ENGINE OIL SENSING SWITCH

Michael Lenk, Toledo, and Richard S. Podiak, Maumee, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Continuation-in-part of Ser. No. 605,350, Apr. 30, 1984, Pat. No. 4,522,170. This application Apr. 1, 1985, Ser. No. 718,312

Int. Cl.[4] F01M *1/00*

U.S. Cl. 123—196 S **12 Claims**



1. A pneumatic switch responsive to the vacuum in a closed crankcase of a reciprocating piston engine, the crankcase containing a volume of lubricating oil, the engine having a check valve connected for venting positive gas pressure from the crankcase to maintain an average vacuum in the crankcase, such vacuum varying as a function of the quantity of oil in the crankcase, said switch indicating when there is less than a predetermined quantity of oil in the crankcase, said switch comprising a housing defining a cylinder with a closed end and a vented end, a piston positioned to slide axially in said cylinder between said closed and vented ends, a spring urging said piston towards said vented end, means for applying vacuum from the engine crankcase to a chamber formed between said piston and said closed housing end to maintain an average vacuum in such chamber whereby the axial position of said piston in said cylinder is determined by the size of said piston, the spring and the vacuum in said chamber, and electric switch means responsive to the position of said piston in said cylinder for indicating when the vacuum in said chamber corresponds to an engine crankcase vacuum when less than the predetermined quantity of oil is in the crankcase.

4,584,978

METHOD AND APPARATUS FOR CONTROLLING SPARK TIMING IN INTERNAL COMBUSTION ENGINES

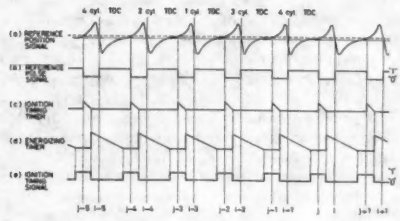
Kiyotaka Sasaki, Nagoya; Ryosuke Tachi, Kariya, and Katsunori Iwamoto, Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Nov. 15, 1984, Ser. No. 671,616

Claims priority, application Japan, Nov. 15, 1983, 58-214286

Int. Cl.[4] F02D *43/00*

U.S. Cl. 123—417 **5 Claims**



1. Apparatus for controlling the spark timing of an internal combustion engine having a crankshaft, comprising:

(a) sensor means for sensing engine operating parameters including engine load and engine rotational speed;

(b) means for generating a reference position signal indicating a predetermined engine crankshaft position;

(c) means responsive to said reference position signal generating means for generating a reference pulse signal having a leading edge advanced with respect to the predetermined engine crankshaft position as a function of the rotational speed of said engine crankshaft and having a trailing edge substantially coinciding with the predetermined engine crankshaft position;

(d) means for deriving a desired ignition timing as a function of the engine operating parameters sensed by said sensor means;

(e) means for computing a period of time elapsed from the leading edge of said reference pulse so that the end of said period of time coincides with said desired ignition timing;

(f) means for detecting the variation of a period between the leading edge and the trailing edge of said reference pulse in relation to each cylinder of said engine; and

(g) correction means including means responsive to said computing means and detecting means for correcting the computed period of time in accordance with the detected variation and means for generating a signal causing an ignition to occur after the elapse of the corrected period of time in response to the leading edge of said reference pulse.

4,584,979
AIR-FUEL RATIO CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH A THREE WAY CATALYTIC CONVERTER

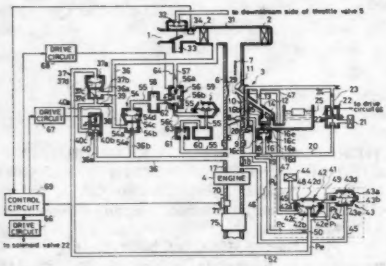
Akira Fujimura, Saitama, and Yoshinori Sato, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,077

Claims priority, application Japan, Aug. 31, 1983, 58-135589[U]

Int. Cl.⁴ F02M *1/08*

U.S. Cl. 123—438 **2 Claims**



1. An air-fuel ratio control system for an internal combustion engine having at least one of a main fuel passage and a slow fuel passage in a fuel supply system thereof, the air-fuel ratio control system being adapted for performing a feedback control of air-fuel ratio according to a detected oxygen concentration of an exhaust gas of the engine, and comprising:

an auxiliary fuel supply means for supplying an auxiliary fuel to the engine through a fuel nozzle opening at a venturi part of a carburetor of the engine;

an intake air temperature sensing means for sensing temperature of intake air introduced to the engine; and

a control means for operating/stopping the feedback control of air-fuel ratio in accordance with the temperature of intake air sensed by said intake air temperature sensing means, said control means comprising a single control valve being adapted to stop said feedback control of air-fuel ratio and activate said auxiliary fuel supply means and to stop a supply of air into at least one of the main fuel passage and slow fuel passage, for enriching the air-fuel ratio when said temperature of intake air is below a predetermined level.

4,584,980
ELECTRICALLY OPERATED VALVE

Günter Weiger, Esslingen; Dieter Dörrie, Plochingen, and Paul Schwerdt, Freudenstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 23, 1983, Ser. No. 525,629

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237258

Int. Cl.⁴ F02M *51/06*

U.S. Cl. 123—458 **6 Claims**

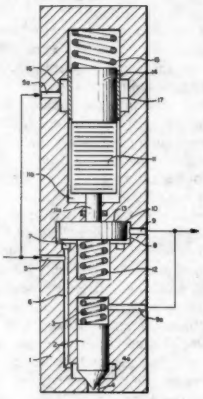
2. A valve assembly operated by an electrical signal for injection systems for internal combustion engines, said valve assembly comprised of a valve housing, a valve seat and an exhaust port wherein both the valve seat and exhaust port are located within said housing, fuel supply and an actuating means, the actuating means being responsive to said electrical signal and subject to at least one of thermal length changes and deformation induced length changes, the actuating means including an actuating means base displaceable along a valve axis,

means for clamping the actuating means base with respect to the valve housing, said means for clamping being responsive to fuel delivery to the valve assembly

a control valve plate means,

said actuating means engageable with said control valve plate means to cause the control valve plate means to engage said valve seat,

means for forcing the control valve plate means away from the valve seat of the valve housing prior to application of



fuel pressure to said valve assembly to allow fluid connection between the fuel supply and exhaust port, and wherein said means for forcing further repositions said control valve plate means away from the valve seat of the housing means following the cessation of clamping to compensate for said one of thermal length change and deformation induced length change in said actuating means.

4,584,981
INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE

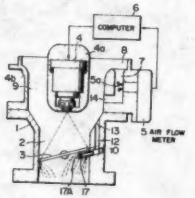
Yoshiyuki Tanabe; Mineo Kashiwaya; Kiyomi Morita, and Katsunobu Kameta, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,024

Claims priority, application Japan, Oct. 7, 1983, 58-187043

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 123—472 **2 Claims**



1. An intake system for an internal combustion engine, the intake system comprising:

means for defining an induction passage;

a throttle valve comprising a throttle plate pivotally mounted in said induction passage by a throttle shaft extending substantially diametrically therethrough;

said induction passage defining means including a throttle body having said throttle valve mounted therein;

at least one fuel injector disposed in said induction passage upstream of said throttle valve and so arranged so as to inject a jet of fuel therein;

said throttle valve being rotatable about the axis of said throttle shaft between idle and fully-opened positions, said throttle valve when in said idle position being inclined to the axis of said induction passage and having upstream and downstream edge portions slightly spaced from the inner peripheral surface of said induction passage to cooperate therewith to define narrow gaps for the passage of air and fuel therethrough for an engine idle operation; and

means for producing a jet of air directed toward the downstream face of said throttle valve when the intake vacuum downstream of said throttle valve exceeds a predetermined level, said air jet producing means including an air passage extending through said throttle body in bypassing relationship to said throttle valve and having an upstream end open to said induction pasage upstream of said throttle valve when in said idle position and disposed such that the fuel injected by said fuel injector does not enter said bypass air passage, said bypass air passage having a downstream end operative to direct a jet of air toward said downstream face of said throttle valve, said downstream end of said bypass air passage comprises an air nozzle extending radially inwardly of said induction passage substantially toward the central zone of said downstream end face of said throttle valve when in said idle position.

4,584,982

ARRANGEMENT FOR A FUEL METERING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

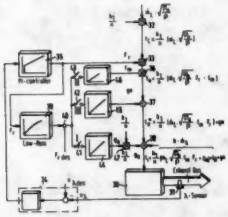
Albrecht Clement, Kornwestheim; Dieter Mayer, Stuttgart, and Ernst Wild, Weissach-Flacht, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 1, 1984, Ser. No. 667,019

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1983, 3341015

Int. Cl.[4] F02M *51/00, 7/00*

U.S. Cl. 123—489 **7 Claims**



1. An arrangement for a fuel metering system for an internal combustion engine, the arrangement comprising:

computer means for generating a fuel metering signal in dependence upon operating parameters of an internal combustion engine such as air quantity, intake air pressure or load, engine rotational speed or also temperature;

oxygen sensor means for forming a sensor signal indicative of the oxygen content of the exhaust gases of the engine;

evaluation means connected to the output of said oxygen sensor means for at least one of directly and indirectly multiplicatively influencing said fuel metering signal;

filter means for receiving said sensor signal and for providing a filter output quantity; and,

control means for utilizing said filter output quantity and engine speed information to additionally additively speed-dependently and additively speed-independently influence said fuel metering signal.

4,584,983

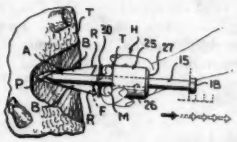
ARCHERY BOW STABILIZER AND EMBEDDED ARROWHEAD REMOVER

Gary S. Ament, Star Rte. #1, Box #18, Alstead, N.H. 03602

Filed Sep. 28, 1983, Ser. No. 536,720

Int. Cl.[4] F41B *5/00*

U.S. Cl. 124—89 **18 Claims**



1. A combined archery bow stabilizer and embedded arrow head remover comprising a generally elongated shaft having opposite end portions, an enlarged head at one of said opposite and portions, a first weight means slidably movable along said shaft between said end portions when utilized as an arrow head remover and being immovable relative to said shaft when utilized as a bow stabilizer, first means on said shaft for securing the other of said opposite end portions to an archery bow, said first weight means function as a bow stabilizer, second means on said shaft for securing said other end portion to the stem of an arrow head embedded in a tree or the like, and the first weight means can be manually impacted against said enlarged head to create impact forces transferred through said shaft to an arrow head to thus facilitate the removal thereof from a tree or the like.

4,584,984

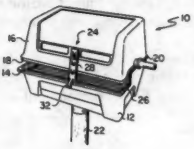
BARBECUE COVER SUPPORT DEVICE

Donald W. Croft, 1418 Kane St., San Diego, Calif. 92110

Continuation-in-part of Ser. No. 502,690, Jun. 9, 1983, abandoned. This application Feb. 14, 1985, Ser. No. 701,410

Int. Cl.[4] F24B *3/00*

U.S. Cl. 126—25 R **2 Claims**



1. A support device for securing the cover of a barbecue in a partially opened position with respect to an underlying brazier, comprising:

an elongated planar support member having a first and second end, and defining a substantially rectangularly-shaped slot through said support member;

a plurality of cover retaining hooks spaced along the length of said support member for receiving and supporting the rim of the barbecue cover;

each of said retaining hooks being cut from said support member and formed to project first outwardly from said support member and then generally parallel to the plane of said support member toward said first end of said support member;

a brazier hook cut from said support member mediate said second end thereof and formed to project first outwardly from said support member and then generally parallel to the plane of said support member toward said second end thereof; and

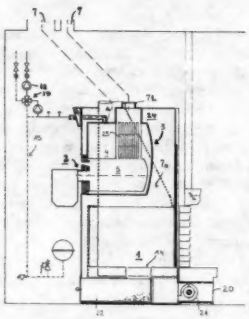
a tool having a heat insulated handle;
a cylindrical shaft projecting from said handle; and
said shaft terminating in a elongated control section of substantially rectangular cross section loosely fitable in said support member slot for manipulating said support member with said tool.

4,584,985

HOT WATER HEATING INSTALLATION

Walter Rüegg, Zumikon, Switzerland, assignor to Rüegg Chemineebau AG, Zumikon, Switzerland

Filed Jul. 14, 1983, Ser. No. 513,835
Claims priority, application Switzerland, Jul. 20, 1982, 4 418/82
Int. Cl.⁴ F24D 9/00
U.S. Cl. 126—101 **22 Claims**



1. A hot water heating installation comprising:
a burner for a flowable fuel;
a heating circuit;
a heat exchanger operatively connected to said heating circuit;
a hearth for solid fuels located in a living area;
a flue flow communicating with said hearth;
said heat exchanger being arranged above said hearth;
said burner being arranged neighboring said heat exchanger;
said heat exchanger being constructed as a closed water jacket; and
said closed water jacket forming inside thereof an internal combustion flame space for the burner and which combustion flame space flow communicates with said flue.

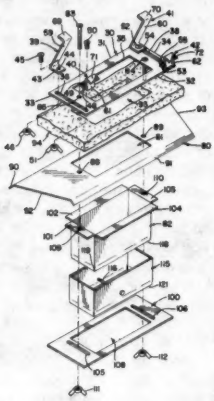
4,584,986

POSITIVE INTERCONNECT SYSTEM FOR FIREPLACE INSERTS

Joseph M. Cannata, 646 Gloucester Dr., Highland Heights, Ohio 44143

Filed Mar. 4, 1985, Ser. No. 708,061
Int. Cl.⁴ F24B 7/00
U.S. Cl. 126—123 **9 Claims**

1. A positive interconnection for an insert having an exhaust vent to be received within a fireplace having a damper frame and a flue disposed upwardly thereof comprising:
a support frame;
a plurality of Z-bars of preselected length whereby to suspend said support frame from the damper frame; said Z-bars being mounted in paired opposition on said support frame, each Z-bar having a diagonal arm, and each pair of Z-bars having one shorter and one longer diagonal;
means being provided by which to connect each Z-bar to said support frame;
said means by which to connect each Z-bar to said support frame permitting each opposed pair of Z-bar hangers to be moved toward and away from each other to permit facile engagement thereof with the damper frame and also to permit fore and aft adjustability in the location of said support frame;
a connector duct means to interconnect said support frame to the exhaust vent;



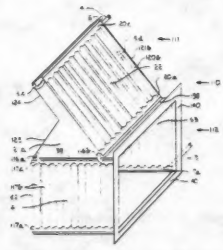
means by which to secure said connector duct to said support frame, said means by which to secure said connector duct to said support frame being wholly separate and distinct from said hanger means; and,
means by which to effect a seal between the connector duct and the fireplace upwardly of the insert.

4,584,987

HEATING SYSTEM USING WOOD AS THE PRINCIPAL SOURCE OF ENERGY

Remo Rotili, 38, Roxton Crescent, Montreal West, Canada (H4X 1C6)

Filed Dec. 21, 1982, Ser. No. 451,870
Claims priority, application Canada, Nov. 3, 1982, 414766
Int. Cl.⁴ F24B 7/00
U.S. Cl. 126—132 **5 Claims**



1. A fireplace hot water boiler comprising a plurality of heat exchange elements suitably coupled together for circulating a liquid such as water therethrough and juxtaposed to define a totally enclosing, free-standing structure defining a radiant section heat exchanger in which a fire is located, an outlet in a top of said radiant section heat exchanger through which all of the combustion gases pass, and a convection section heat exchanger connected to said outlet and through which the combustion gases pass, each heat exchanger element comprising an inner wall, a coextensive and generally parallel outer wall peripherally welded to said inner wall, and duct means for the

water circulating thorugh the space defined between said inner and outer walls, the inner and outer walls of each heat exchanger element being made of gauge sheet metal of steel at least one of which being configured by embossing, stamping or otherwise with a pluraity of regularly and generally vertically distributed contact regions where said inner and outer walls contact one another and are welded together to provide generally vertical water flow paths between consecutive contact regions, each heat exchanger element being designed and constructed to withstand the working pressure of domestic pressurized hot water heating systems and the thermal stresses of wood burning, said fireplace hot water boiler further comprising pipe means for suitable connected with a hot water heat load.

4,584,988

ILLUMINATION APPARATUS FOR ENDOSCOPE

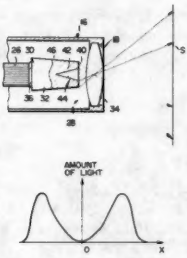
Kimihiko Nishioka, Tokyo, and Hiroyuki Kimura, Oosaka, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,158

Claims priority, application Japan, Sep. 2, 1983, 58-161483; Sep. 19, 1983, 58-172379

Int. Cl.[4] A61B *1/06*

U.S. Cl. 128—6 **14 Claims**



1. An illumination apparatus for an endoscope provided with a narrow insertion section open at the distal end and connected to a light source device, comprising:

a light guide, which extends through the insertion section, said guide being provided with a light-issuing end disposed adjacent to the distal end opening of the insertion section, and which conducts light beams emitted from the light source device;

an optical element, which is prepared from a light-permeable material, facing the light-issuing end of the light guide, said optical element being provided with a light-receiving surface which is exposed to light beams emitted from the light-issuing surface facing the light-receiving surface and which transmits light beams delivered from the light-receiving surface, and a peripheral surface between the light-receiving and issuing surfaces; and

a lens arranged in the distal end opening to face the light-issuing surface of the optical element, and which allows for the permeation of light beams emitted from the light-issuing surface of the optical element and transmits the light beams from the distal end opening;

said optical element being provided with a depression formed in substantially the center of the light-issuing surface thereof, whereby the light beams from the light guide are repeatedly reflected on the peripheral surface of the optical element and on the inner surface of the depression, emitted from the issuing surface and conducted through the lens in an annular pattern whose central portions grow dark and whose peripheral portions are rendered bright.

4,584,989

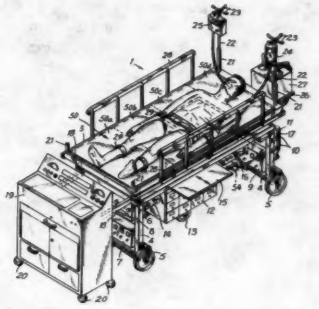
LIFE SUPPORT STRETCHER BED

Rosemarie Stith, 100-26 G Darrow Pl., Bronx, N.Y. 10475

Filed Dec. 20, 1984, Ser. No. 684,150

Int. Cl.[4] A61G *1/02*

U.S. Cl. 128—1 D **6 Claims**



1. A self-contained, self-powered, mobile, life support stretcher bed for critically ill patients requiring intensive care, treatment and monitoring with the aid of electrical medical devices powered by flexible electrical cables terminating in electrical plugs, medical supplies and implements, said bed comprising:

(a) an undercarriage including a support structure and a plurality of wheels by means of which the support structure is supported on the ground from one location to another;

(b) a platform mounted on said undercarriage and adapted to support a patient in a supine position;

(c) an electrical power source mounted on the undercarriage, said power source having a plurality of identical electrical outlets arranged at a plurality of exterior readily accessible locations in the circumambient region of the undercarriage to provide readily accessible power taps to desired ones of which any electrical plug of the respective medical devices is connected; and

(d) support means mounted on the undercarriage and having a plurality of support members arranged at a plurality of locations in the circumambient region of the undercarriage to provide readily available supports onto desired ones of which the respective medical devices, medical supplies and implements are mounted,

whereby a complete space-saving, organized intensive care environment is created for the patient to whom ready access is available.

4,584,990

PROSTHETIC SPHINCTER HAVING A DIAMETRIC OCCLUSION GEOMETRY

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, Irvine, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Oct. 2, 1984, Ser. No. 656,980

Int. Cl.[4] A61B *19/00*

U.S. Cl. 128—1 R **11 Claims**

1. A prosthetic sphincter for surgical implantation to achieve coaptive continence, said sphincter including an occlusion cuff to surround at least some of a patient's lumen for applying variable occlusive pressures for occluding and relaxing the lumen and thereby controlling the movement of material therethrough,

said occlusion cuff having first and second expandable chambers positioned opposite one another for engaging the patient's lumen and being adapted to receive a fluid medium to apply diametric occlusive pressures to the lumen for achiev-

ing coaptive continence when such chambers are expanded by the receipt therein of such fluid, there being no fluid communication between said first and second chambers, and

said sphincter comprising first and second occlusive pressure adjustment means to be operated independently of one another and respectively interconnected with said first and second expandable chambers for supplying a selected one or the other of said chambers with fluid medium for expanding said chambers to vary the occlusive pressures being applied to the patient's lumen,

said first occlusive presure adjustment means including a compressible reservoir containing a supply of said fluid medium, a first delivery tube extending between said reservoir and said first expandable chamber for delivering fluid medium to said chamber, a normally closed flow control valve to permit the movement of said fluid medium between said reservoir and said first chamber to expand said first chamber when said reservoir is compressed and said flow control valve is thereby temporarily opened, and pressure relief means location at the periphery of said flow control valve and surgically implanted so as to be manually activated to temporarily open said flow control valve to permit the movement of said fluid medium from said first chamber to said reservoir to shrink said fluid chamber,

said second occlusive pressure adjustment means including a subcantaneously disposed entry port for receiving the tip of a fluid medium supplying syringe and a second delivery tube extending between said entry port and said second expandable chamber for delivering fluid medium to said second chamber to expand said second chamber when said fluid medium is injected into said entry port.

4,584,991

MEDICAL DEVICE FOR APPLYING THERAPEUTIC RADIATION

Kenneth M. Tokita, 1408 Via Arco, Palos Verdes Estates, Calif. 90274, and Belmont L. Haller, 3279 Cedar Ave., Long Beach, Calif. 90806

Filed Dec. 15, 1983, Ser. No. 561,879
Int. Cl.[4] A61N *5/12*
U.S. Cl. 128—1.1 **17 Claims**

1. A device for applying therapeutic radiation from a preselected radiation source to a predetermined portion of a body comprising, in combination: a body member having:

an external peripheral surface;

a first end surface; and

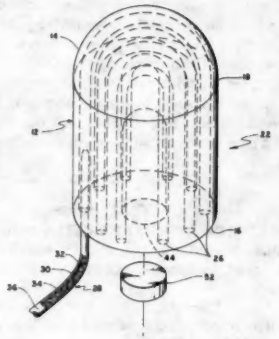
a second end surface spaced from said first end surface;

said body member further comprising:

at least first internal walls defining a first radiation source receiving channel means spaced a preselected distance from said peripheral surface, and having:

a first portion extending from said second end surface to regions adjacent said first end surface; and

a second portion extending from said first portion at said first end surface to said second end surface; and,



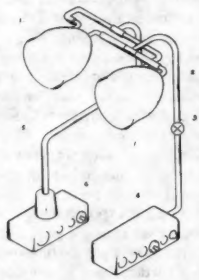
said channel means communicating with regions external said body member at said second surface whereby the radiation source of a preselected intensity inserted at least along a preselected portion of said channel means is applied to the predetermined area of the body requiring therapeutic radiation treatment.

4,584,992

STEAM-HEATING BREAST MASSAGER

Su-Hwa Liu, No. 41-2 Hsin Kwang Road, Kaohsiung, Taiwan

Filed Dec. 5, 1983, Ser. No. 557,835
Int. Cl.[4] A61H *29/00*; A61F *7/00*
U.S. Cl. 128—24.1 **2 Claims**

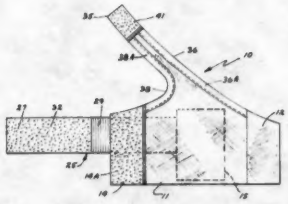


1. A steam-heating breast massager comprising a pair of breast cups, only a half part of said cups having two separated layers of cup walls forming a space for storing water vapor, said vapor running through a plurality of vapor holes bored in the internal wall of said half part of said breast cups, said breast cups being connected to a suction generator means and to a steam generator means, said suction generator means causing sucking and releasing action massaging the breast, which is simultaneously warmed up and softened directly by the water vapor coming from said steam generator means through said vapor holes, the action of the steam and suction generators being coordinated by a timer means.

4,584,993
WRIST BRACE

Ronald E. Nelson, 8710 Central Ave., NE., Blaine, Minn. 55434

Continuation-in-part of Ser. No. 395,121, Jul. 6, 1982, abandoned. This application Sep. 12, 1984, Ser. No. 649,735
Int. Cl.[4] A61F 5/00
U.S. Cl. 128—77 31 Claims



1. A wrist brace comprising:

a generally flat base of sheet material adapted to be formed into a tubular sleeve having proximal and distal sides closely conformable to proximal and distal sides of a wrist and formed of elastic material stretchable in a circumferential direction around a wrist;

a first longitudinal support member fixed on the proximal side of the base for positioning on the proximal side of a wrist when the base is engaged on the wrist;

said first support member having a plurality of longitudinal pockets, and a plurality of resilient stay members located in the pockets;

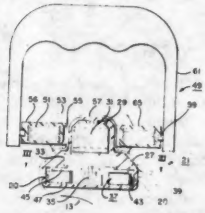
a first flexible elastic support strap having one end fixed to the base adjacent the first support member and a free end extendible in tension around the base and the first support member; and

means to secure the first support strap in stretched relationship around the base and first support member.

4,584,994
ELECTROMAGNETIC IMPLANT

Charles Bamberger, 1400 S. Main St., #105, and James W. Tunstill, 1400 S. Main St., #512, both of Fort Worth, Tex. 76104

Filed Sep. 30, 1983, Ser. No. 537,785
Int. Cl.[4] A61F 5/00
U.S. Cl. 128—79 2 Claims



1. In a penile prosthesis of the type having at least one inflatable cylinder adapted to be implanted in a penis and a reservoir containing fluid implanted in the user's body for supplying fluid through a flexible tube to the cylinder to erect the penis, an improved apparatus for pumping the fluid between the reservoir and cylinder, comprising:

a sealed housing adapted to be implanted in a scrotum;

an alternating current electric motor rotor having a cylindrical sidewall and mounted within the sealed housing, the sealed housing being positioned such that skin of the scrotum may be pulled tightly over a portion of the housing containing the rotor to define a protuberance protruding from the body;

a semi-cylindrical interior wall formed in the housing, the housing having passages which receive a loop of the tube, which lies alongside the interior wall;

gear reduction means connected to the rotor and having an output shaft located concentrically within the interior wall, for transmitting higher speed rotation of the rotor to lower speed higher torque output on the shaft;

linkage means connected to the shaft for rotating with the shaft a pair of rollers opposite each other and in close proximity to the interior wall, to squeeze the tube against the wall and pump fluid to and from the reservoir depending upon the direction of rotation; and

an alternating current electromagnetic field generating means for creating an electromagnetic field, the electromagnetic field means adapted to be located exterior of the body and having aperture means for positioning the electromagnetic field generating means radially around the protuberance to cause the rotor to rotate;

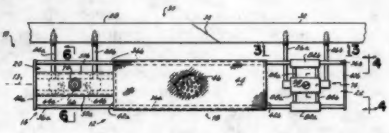
the aperture means of the electromagnetic field generating means comprising a cylindrical bore formed within a plurality of stator disks and which is adapted to receive the protuberance and surrounds the sidewall of the rotor entirely;

the electromagnetic field generating means polarizing the bore in the stator disks such that when the disks are placed over the protuberance with a first side facing toward the user's body the rotor will rotate in one direction, and when the disks are placed over the protuberance with the first side facing away from the user's body, the rotor will rotate in the opposite direction.

4,584,995
EXTERNAL FIXATION DEVICE

James B. Koeneman, Phoenix, Ariz., assignor to Orthotic Limited Partnership, Tempe, Ariz.

Filed Apr. 26, 1984, Ser. No. 604,047
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 A 14 Claims



1. An external fixation device for positioning and immobilizing the distal portion and proximal portion of a fractured bone to reduce the fracture, comprising:

a frame having opposed ends and a center section therebetween, said center section including a body of low density material encased with at least one layer of composite reinforcement material;

a first coupling element mounted to one end of said frame, said first coupling element being adapted to clamp retaining pins inserted into one of the proximal and distal portions of the fractured bone;

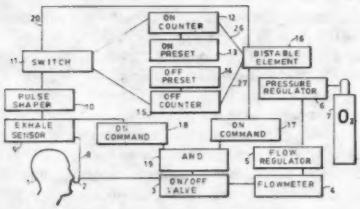
a second coupling element mounted to the other end of said frame, said second coupling element being adapted to clamp retaining pins inserted into the other of the proximal and distal portions of the fractured bone;

said first and second coupling elements being movable with respect to said frame independently of one another to align the proximal and distal portions of the fractured bone for reduction of the fracture.

4,584,996
APPARATUS FOR CONSERVATIVE SUPPLEMENTAL OXYGEN THERAPY

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Filed Mar. 12, 1984, Ser. No. 588,691
Int. Cl.[4] A61M 16/00
U.S. Cl. 128—204.21 20 Claims



1. In apparatus for intermittently supplying respiratory gas to a spontaneously breathing subject which is supplemental to said subject's normal ambient air intake including a gas supply connection means adapted for connection to a gas supply and a subject connection means adapted for delivering said gas to said subject without substantially obstructing said subject's access to ambient air, the improvements comprising: gas conduit means adapted for connection between said gas supply connection means and said subject connection means to provide a fluid path for said gas; valve means interposed in said gas conduit means for controlling an intermittent flow of said gas by sequentially and repetitively opening said valve means for a predetermined number of ON respiratory cycles and closing said valve means for a predetermined number of OFF respiratory cycles; respiratory cycle sensing means adapted for connection to said subject for sensing the respiratory cycles of said subject; counter means connected to said sensing means for summing the number of respiratory cycles; counter presetting means connected to said counter means, causing said counter means to respond when a preset number of cycles has been registered on said counter means, said presetting means including means for storing at least one ON number representing a predetermined number of ON respiratory cycles and at least one OFF number representing a predetermined number of OFF respiratory cycles; valve controller means connected between said counter means and said valve means, wherein said valve controller means is responsive to the response of said counter means upon registration of said preset numbers by operating said valve means, wherein said valve controller means turns said valve means on when a preset OFF number has been registered by said counter means and turns said valve means off when a preset ON number has been registered by said counter means to conserve said gas supply by providing a flow of supplemental gas only during those respiratory cycles when it can be most useful and conserving said gas during other respiratory cycles when it will be less useful.

4,584,997
VOLUMETRIC FLOW GAUGE

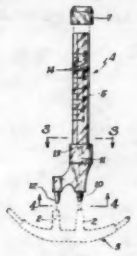
Harold D. Delong, 1751-258 W. Citracado Pkwy., Escondido, Calif. 92025

Filed Feb. 27, 1984, Ser. No. 583,724
Int. Cl.[4] A61M 16/00
U.S. Cl. 128—205.23 10 Claims

1. A volumetric flow meter for detecting the oxygen flow from an oxygen delivery apparatus having at least one nasal cannula outlet comprising:

(a) indicator means proportionately responsive to gas flow to indicate the volumetric flow of gas passing therethrough per unit of time;

(b) nasal cannula fitting means connected to said indicator means and configured to be connected to said at least one nasal cannula outlet to receive the oxygen flowing there-

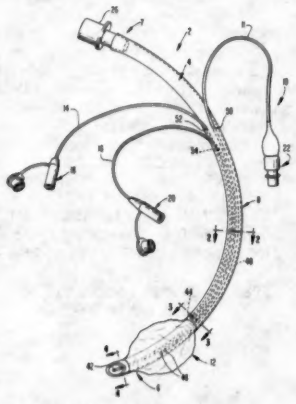


from and direct same to said indicator for measurement of the volumetric flow of said oxygen.

4,584,998
MULTI-PURPOSE TRACHEAL TUBE

Thomas W. McGrail, Glens Falls, N.Y., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sep. 11, 1981, Ser. No. 301,202
Int. Cl.[4] A61M 16/00
U.S. Cl. 128—604 7 Claims



1. A balloon-type catheter comprising:

(a) an extruded tube formed of flexible plastic material comprising a primary lumen and first, second, and third secondary lumens each of which has a smaller diameter than the primary lumen, all of said lumens extending substantially the entire length of the tube;

(b) a proximal opening in said tube cut through the exterior tube wall into communication with the first secondary lumen, an inflation tube fixed through said proximal opening to said first secondary lumen in said tube;

(c) a distal opening cut through the exterior wall of the catheter adjacent the distal end into communication with said first secondary lumen;

(d) an inflatable balloon fixed about the catheter adjacent its distal end enveloping said distal opening of said first secondary lumen;

(e) said second secondary lumen comprising an insufflation lumen having a proximal opening through the exterior wall of the tube, a second tube fixed through said proximal opening of said secondary lumen, a distal opening dis-

placed proximally from the distal end of the tube cut through the interior wall of the catheter into communication with said second secondary lumen; and

(f) said third secondary lumen comprising an irrigation or monitoring lumen having a proximal opening through the exterior walls of the tube, a third tube fixed through said proximal opening of said third secondary lumen, a distal opening adjacent the distal end, displaced from the distal opening of the second secondary lumen, forwardly toward the distal end of the catheter.

4,584,999

SAW BLADE WITH SHALLOW SECTION

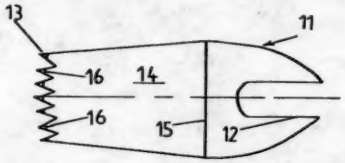
Richard E. Arnegger, Rietlirain, 8713 Uerikon, Switzerland

Continuation-in-part of Ser. No. 394,187, Jul. 1, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,410

Claims priority, application Switzerland, Jul. 14, 1981, 4595/81

Int. Cl.⁴ A61B *17/14*

U.S. Cl. 128—317 **2 Claims**



1. A method of forming a saw blade with a row of teeth for surgical operations on bones, wherein said teeth are of a height which extends between the cutting edge and the base of the teeth, the saw blade is of plate-shaped form made of etchable material and having two side faces, and is built to perform an oscillating movement, the method comprising the steps of forming said teeth for cutting in both directions of the blade subject to oscillating movement, arranging said row of teeth along a part of the edge of the saw blade with the teeth disposed parallel to the side faces of the blade, i.e. being unset, and providing by etching each of said side faces to form a shallow recessed section extending up to the location of the teeth and extending over at least two-thirds of the height of the teeth, with the shallow sections being in registry with and parallel to each other.

4,585,000

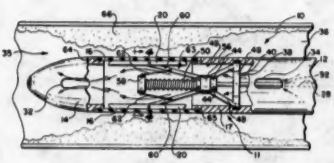
EXPANDABLE DEVICE FOR TREATING INTRAVASCULAR STENOSIS

Harold Hershenson, Coral Gables, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Sep. 28, 1983, Ser. No. 537,248

Int. Cl.⁴ A61M *29/00*

U.S. Cl. 128—345 **22 Claims**



4. An intravascular expandable device adapted to be inserted within and through the lumen of a blood vessel and manipulatable therethrough to a stenotic area where it can be operated for re-establishing desired blood flow through the blood vessel, said device comprising: an elongate tubular body having a proximal end, a distal end and a central bore therethrough, expandable pressure applying means including a flexible tubular member extending from said distal end of said tubular body and a mechanical mechanism within said flexible tubular member capable of engaging and expanding said tubular member radially outwardly only; a tip member connected to the distal end of said flexible tubular member; said mechanism including a nut with an axis coaxial with the axis of said tubular member, a plurality of curved-in-cross-section elongate baffles, a plurality of linkages, each baffle being pivotally connected by one of said linkages to said nut, said nut having threads therein, a threaded rod extending axially through said bore and being journaled to said tubular body or to said tip member, being received through said nut and being capable of causing axial movement of said nut when rotated to cause each linkage to move one of said baffles outwardly to expand said tubular member, a bushing on said threaded rod adjacent the distal end thereof for limiting axial movement of said nut on said threaded rod, each linkage including an arm pivotally connected at one end to said nut and pivotally connected at the other end to the underside of one of said baffles, and a strut pivotally connected to said bushing and to one of said arms intermediate the ends thereof, and expansion and retraction control means coupled to said mechanical mechanism for causing said mechanism to expand said flexible tubular member, to maintain said flexible tubular member expanded and to allow said flexible tubular member to retract within a stenotic area.

4,585,001

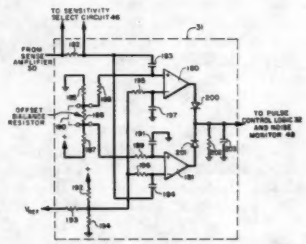
CARDIAC PACER SIGNAL DETECTOR

Kenneth W. Belt, Fort Atkinson, Wis., assignor to Norland Corporation, Fort Atkinson, Wis.

Division of Ser. No. 425,223, Sep. 28, 1982, Pat. No. 4,436,093, which is a continuation of Ser. No. 203,959, Nov. 4, 1980, abandoned. This application Jan. 23, 1984, Ser. No. 573,149

Int. Cl.⁴ A01N *1/36*

U.S. Cl. 128—419 PG **3 Claims**


TO SENSITIVITY SELECT CIRCUIT 46
FROM SENSE AMPLIFIER 50
OFFSET BALANCE RESISTOR
TO PULSE CONTROL LOGIC 32 AND NOISE MONITOR 48

1. A detector circuit for detecting the occurrence of a desired sensed cardiac signal component in the presence of extraneous noise components in a cardiac sensing channel of a cardiac pacer, wherein the absolute amplitude of the desired cardiac signal component exceeds a predetermined threshold level greater than the absolute amplitude level of the extraneous noise component, comprising:

a first differential amplifier having inverting and non-inverting inputs;

a second differential amplifier having inverting and non-inverting inputs;

means for applying said sensed cardiac signal component and said noise components to said inverting input of said first differential amplifier, and to said non-inverting input of said second differential amplifier;

bias means for applying a first bias at a first predetermined voltage level to said non-inverting input of said first differential amplifier and for applying a second bias at a second predetermined voltage level to said non-inverting input of said second differential amplifier;

reference voltage means for applying a reference voltage at

a third predetermined voltage level greater than each of said first and second predetermined voltage levels to each of said inverting inputs whereby said first differential amplifier produces an output upon said signal component exceeding the difference between said first bias and reference voltage levels in one direction, and said second differential amplifier produces an output upon said signal component exceeding the difference between said second bias and reference voltage levels in the other direction; and

means for combining the outputs of said first and second differential amplifiers to form an output signal indicative of said signal component.

4,585,002

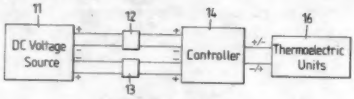
METHOD AND APPARATUS FOR TREATMENT OF PAIN BY FREQUENTLY ALTERNATING TEMPERATURE STIMULATION

Igor Kissin, 1216 Ingram Ave., Birmingham, Ala. 35213

Filed Apr. 22, 1985, Ser. No. 725,950

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—399 **18 Claims**



1. Apparatus for treatment of pain by iterative application of a thermal gradient to the skin comprising:

(a) thermoelectric means for generating a thermal gradient in adjacent skin tissue responsive to an electrical current input thereto;

(b) controller means operatively connected to said thermoelectric means for adjusting the duration of the application of said thermal gradient and the direction of the thermal gradient periodically whereby the direction of said thermal gradient is reversed at least once per minute; and

(c) means for varying the intensity of said thermal gradient by varying amplitude of the electrical current input to said thermoelectric means.

4,585,003

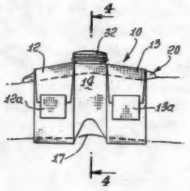
ICE-PACK RETENTION DEVICE

William R. Meistrell, Manhattan Beach, Calif., assignor to Dive N' Surf, Inc., Hermosa Beach, Calif.

Filed Dec. 31, 1984, Ser. No. 687,909

Int. Cl.[4] A61F *7/08, 7/10*

U.S. Cl. 128—402 **4 Claims**



1. A hot or cold pack retention device, in combination with the pack which is flat and generally circular and having a central neck, comprising

(a) an elongated, insulative, flexible, relatively thin sheet means having two generally parallel, elongated legs joined to a sheet main portion, each leg substantially longer than its width,

(b) said main portion forming a hole to fittingly receive said pack neck, the sheet main portion then substantially completely covering, engaging, gripping, and conforming to the shape of the pack, with said legs projecting away from surfaces of the pack at opposite sides of said neck,

(c) the legs than wrapping about and over the sheet main portion at opposite sides of said neck to hold the pack to a user's body,

(d) said sheet comprising elastomer foam, and being insulative and bi-directionally stretchable,

(e) the sheet including a layer of stretchable pile fabric covering the outerside of said elastomer foam, and there being hook elements carried by said legs to removably attach to said fabric layer.

4,585,004

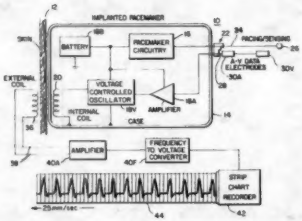
HEART PACING AND INTRACARDIAC ELECTROGRAM MONITORING SYSTEM AND ASSOCIATED METHOD

Robert R. Brownlee, Ormond Beach, Fla., assignor to Cardiac Control Systems, Inc., Palm Coast, Fla.

Filed Jun. 1, 1984, Ser. No. 616,054

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 PT **13 Claims**



1. An implantable human heart pacing and monitoring system comprising:

(a) an implantable housing;

(b) a heart pacer circuit within said housing;

(c) a first pacing-sensing electrode connected to said pacer circuit;

(d) a telemetry circuit within said housing;

(e) an A-V data lead connected to said telemetry circuit and including a data wire electrically separate from said first pacing-sensing electrode and:

(I) a detecting atrium ring electrode, and

(II) a detecting ventricle ring electrode, wherin said atrium ring and said ventricular ring are electrically tied in common to said data wire, and said data wire is operable to feed a complete intracardiac electrogram to said telementry circuit; and

(f) a coil connected to said telemetry circuit and operable to transmit at least one pacer circuit function and the complete paced and nonpaced intracardiac electrogram.

4,585,005

METHOD AND PACEMAKER FOR STIMULATING PENILE ERECTION

Tom P. Lue, Millbrae; Emil A. Tanagho, San Rafael, and Richard A. Schmidt, San Francisco, all of Calif., assignors to Regents of University of California, Berkeley, Calif.

Filed Apr. 6, 1984, Ser. No. 597,502

Int. Cl.[4] A61N *1/32*

U.S. Cl. 128—419 R **9 Claims**

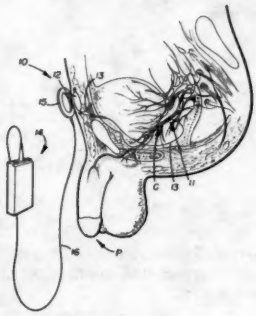
1. A method for stimulating penile erection in a human male comprising the steps of

identifying the anatomical location of at least one cavernous nerve of a penis,

implanting electrode means at least closely adjacent to said cavernous nerve and intermediate the sacral nerves and the apex of the prostate,

implanting a subcutaneous receiver on said human male,

electrically connecting said electrode means to said receiver, and



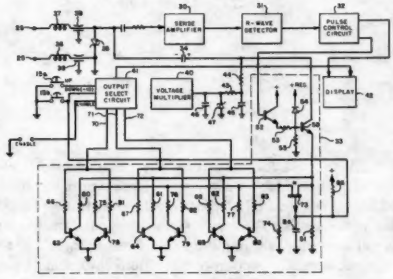
electrically energizing said receiver to transmit electrical energy to said electrode means and to said cavernous nerve.

4,585,006

CARDIAC PACER HAVING STIMULATION THRESHOLD MEASUREMENT CIRCUIT

John H. Livingston, Coral Gables, and Robert DeCote, Jr., Miami Beach, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Continuation of Ser. No. 409,328, Aug. 18, 1982, abandoned.
This application Dec. 28, 1984, Ser. No. 686,620
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG **6 Claims**



1. A cardiac pacer for use in conjunction with an external pacer lead for developing recurrent pacing pulses of predetermined current amplitude, comprising:

an output terminal for establishing electrical communication with the pacing lead;

a plane of reference potential;

a unidirectional current source for developing relative to said plane of reference potential a unidirectional pacing current;

a pacing output capacitor, one terminal of said capacitor being connected to said unidirectional current source and the other terminal of said capacitor being connected to said output terminal;

pacer control circuit means for producing a pacing control signal for controlling the occurrence of pacing pulses;

switch means responsive to said pacing control signal connected between said one terminal of said capacitor and said plane of reference potential for connecting said capacitor to said output terminal upon the occurrence of each control pulse whereby said capacitor discharges through the pacing lead to produce a pacing pulse;

current limiting means comprising an output resistor in series circuit relationship with said switch means and said capacitor for controlling the discharge of said capacitor through the pacer lead;

pulse amplitude control circuit means responsive to a user-initiated input for producing a pulse amplitude control signal;

a predetermined plurality of primary shunt resistors;

first switching circuit means responsive to said output control signal and including a plurality of switch devices individually associated with respective ones of said primary shunt resistors for connecting selected ones of said primary shunt resistors in parallel-circuit relationship to said output resistor to selectively provide one of a plurality of predetermined pacing pulse amplitudes during a first operating mode of the pacer;

a plurality of secondary shunt resistors of like number to and in correspondence one for one with said predetermined plurality of primary shunt resistors;

second switching circuit means responsive to said output control signal and including a plurality of switch devices individually associated with respective ones of said secondary shunt resistors for connecting in parallel-circuit relationship with said output resistor those of said plurality of secondary shunt resistors which correspond to those of said plurality of primary shunt resistors selected by said first output control circuit means; and

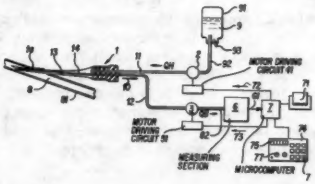
user-actuable mode control means for connecting said selected secondary shunt resistors in parallel with said output resistors in a first mode of operation, and for interrupting said connections in a second mode of operation and said selected ones of said primary shunt resistors to selectively reduce the amplitude of the pacer pulse to a predetermined fraction of the pulse amplitude selected in said first mode of operation.

4,585,007

METHOD FOR CONTINUOUSLY MEASURING A SPECIFIED INGREDIENT IN A DILUTED LIQUID

Takatoshi Uchigaki; Hiroshi Hyodo, and Teijiro Iwase, all of Kyoto, Japan, assignors to Kabushiki Kaisha Kyoto Daiichi Kagaku, Japan

Filed May 10, 1983, Ser. No. 493,415
Claims priority, application Japan, May 15, 1982, 57-82009
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—632 **4 Claims**



1. A method for continuously measuring a specified ingredient of a first liquid, said first liquid being diluted with a diluent to form a diluted liquid, while continuously monitoring the concentration of said specified ingredient contained in said first liquid by selecting and mixing said first liquid and said diluent and transferring at least one of said diluted liquid, said diluent and said first liquid by respective tube pumps into a measuring section wherein dilution ratios are determined, said method comprising the steps of:

selecting said diluted liquid at two or more dilution ratios and changing the quantity of at least one of said transferred diluent and said transferred first liquid during said

determination in said measuring section to change at least one of said dilution ratios;

determining a real dilution ratio of said diluted liquid at a first period of time, said first period of time occurring when quantities of said transferred liquids have been changed, according to measured values of said specified ingredients determined at said dilution ratios; and

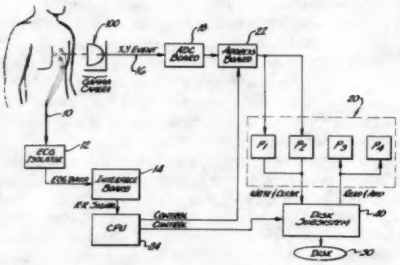
determining the concentration of said specified ingredient in said first liquid using said real dilution ratios obtained in any one of periods of time occurring before, after and during said first period of time.

4,585,008

REAL TIME CARDIAC RADIONUCLIDE IMAGING

Gary G. Jarkewicz, Willoughby, Ohio, assignor to Technicare Corporation, Solon, Ohio

Filed Sep. 29, 1982, Ser. No. 427,075
Int. Cl.[4] A61B 6/00
U.S. Cl. 128—654 **4 Claims**



1. A data acquisition system for use in radionuclide cardiac imaging of a patient having been administered a myocardium specific radionuclide, comprising:

(a) means for monitoring the electrical activity of the heart;

(b) first temporary storage means for accumulating respective pages of data corresponding to nuclear events during each said cardiac cycle;

(c) means, responsive to said means for monitoring, for determining the time duration of each successive cadiac cycle;

(d) means for comparing each said determined duration of a cardiac cycle with a preselected time duration range;

(e) second temporary storage means; and

(f) means for conditionally transferring pages of data from said first temporary storage means to said second temporary storage means if the measured duration associated with each said page has predetermined correspondence with said preselected duration range, whereby pages of data having said predetermined correspondence may be collated into a quasi-real time study, while pages of data having different correspondence with said preselected time duration range are discarded form said study.

4,585,009

STRONTIUM-RUBIDIUM INFUSION PUMP WITH IN-LINE DOSIMETRY

Samuel L. Barker, Lawrenceville, and Michael D. Loberg, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

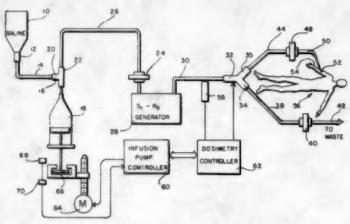
Filed Feb. 28, 1983, Ser. No. 470,841
Int. Cl.[4] A61N 5/00
U.S. Cl. 128—655 **8 Claims**

1. A strontium-rubidium infusion system comprising:

(a) means for generating rubidium 82 in a solution which can be infused into a patient;

(b) means for infusing said solution into a patient;

(c) means for measuring the radioactivity present in said solution as it is infused into said patient; and



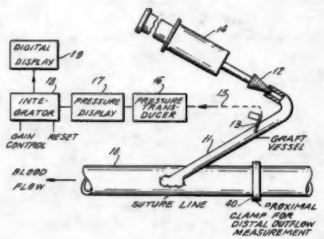
(d) means for controlling said means for infusing in response to the amount of radioactivity which has been infused into said patient.

4,585,010

PROCESS AND APPARATUS FOR MEASUREMENT OF OUTFLOW RESISTANCE

Enrico Ascer, 231 Delhi Rd., Scarsdale, N.Y. 10583; Lee M. E. Morin, Room 334 UOPH Box 18 Subase, Groton, Conn. 06349, and Frank J. Veith, 3184 Grand Concourse, Bronx, N.Y. 10458

Filed Jul. 2, 1984, Ser. No. 627,065
Int. Cl.[4] A61B 5/02
U.S. Cl. 128—673 **13 Claims**



1. A process for measuring the resistance to flow in the runoff bed of a blood carrying vessel comprising the steps of attaching one end of a bypass graft vessel to said blood carrying vessel so that the interior of said bypass graft vessel communicates with said blood carrying vessel; injecting a volume of a substantially incompressible fluid into said bypass graft vessel so that said fluid flows into said blood carrying vessel; measuring the pressure at which said fluid is injected into said bypass graft vessel for a given time; integrating said pressure which is measured during said given time; measuring the volume of fluid which flows during said given time, and dividing said integrated pressure by said measured volume to determine resistance to flow in the runoff bed.

4,585,011

CONJUGATE EYE MOVEMENT DETECTOR FOR SLEEP ANALYSIS

Roger Broughton, and Bernardo da Costa, both of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

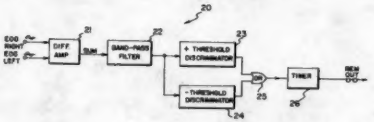
Filed Oct. 10, 1984, Ser. No. 659,297
Claims priority, application Canada, Oct. 14, 1983, 439063
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—733 **3 Claims**

1. A rapid eye movement detector for a sleep analyser comprising:

means for combining a left eye EOG signal and a right eye EOG signal to provide an electro-oculogram signal,

means for receiving the combined electro-oculogram (EOG) signal;

first means for selecting components of the combined EOG signal havina a predetermined rise time;



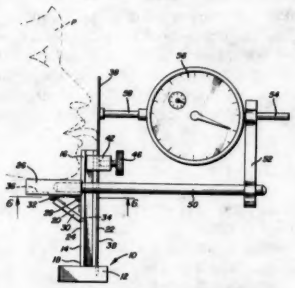
second means for selecting components of the combined EOG signal having a predetermined amplitude; and

means for producing an output pulse each time a predetermined rise time component is coincident with a predetermined amplitude component, as an indication of rapid movement of the left and the right eyes in synchrony.

4,585,012
TONGUE MUSCULATURE MEASUREMENT AND STRENGTHENING APPARATUS

Lorri K. Rumburg, 211 Armstrong Ave., Frostburg, Md. 21532

Filed Jul. 20, 1984, Ser. No. 632,727
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—777 **7 Claims**

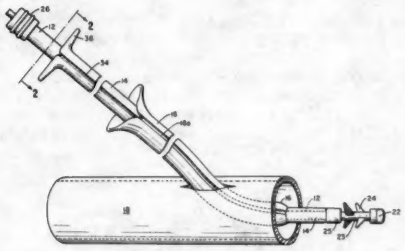


1. A tongue musculature measurement and strengthening apparatus, said apparatus including a support having front and rear sides and upper and lower marginal portions, a horizontal chin rest supported from said upper marginal portion below the upper marginal portion below the upper terminal end thereof and projecting rearwardly of said support, an elongated spring blade having opposite side surfaces facing forwardly and rearwardly of said support and including base and free ends, means stationarily mounting said base end from said support with said blade positioned with the free end of said blade spaced above and forward of said chin rest for engagement by the free end of the tongue of a patient having his or her chin resting upon said chin rest and disposed immediately rearward of said upper marginal portion, said free end of said blade being forwardly displaceable relative to said support as a result of sufficient forward tongue pressure applied there against from the rear facing side surface thereof, and abutment means mounted from said support for adjusted shifting relative thereto longitudinally of said blade between said base and free ends and closely overlying the forwardly facing surface of said blade to thereby adjust the effective moment arm length of said blade between said abutment means and said blade free end portion and measurement means operative to indicate the amount of forward deflection of said free end of said blade as a result of forward tongue pressure thereon.

4,585,013
LUMENLESS PERVENOUS ELECTRICAL LEAD AND METHOD OF IMPLANTATION

Donald L. Harris, Miami Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 255,703, Apr. 20, 1981, abandoned. This application May 18, 1983, Ser. No. 495,636
The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.
Int. Cl.[4] A61N *1/05*
U.S. Cl. 128—785 **11 Claims**



1. A pervenous lead system for establishing electrical contact between an electrical stimulation generator and an internal organ, comprising

an implantable lead with proximal and distal ends having a flexible substantially solid insulated lead body carrying at least one electrical conductor, said proximal end having means for electrically connecting the electrical stimulation generator to the electrical conductor, said lead having a portion of enlarged diameter toward the distal end and an electrode connected thereto in electrical contact with said conductor,

removable sleeve means slidably mounted on said lead body for applying axial force directly to the enlarged distal portion of said lead including a flexible guide sleeve disposed coaxially and slidably over substantially the entire length of said lead body with a uniform inner diameter between those of said lead body and the enlarged distal portion of said lead such that said sleeve is slidable into abutment with the enlarged distal portion of said lead so as to drive it forward when the sleeve is advanced from the proximal end,

said enlarged distal portion including guide sleeve stop means proximally spaced along said lead body from said electrode for blocking independent forward movement of the abutting end of the guide sleeve, and

a plurality of deployable flexible tissue-engaging projections extending outwardly from said lead body between said sleeve stop means and said electrode.

9. A method of implanting a lumenless electrical lead through the vascular system of the body, comprising the steps of

providing a lead system comprising a lead having a flexible, substantially solid, insulated, electrically conductive lead body with a proximal and distal end, said lead including a connector electrically connected to the proximal end of said lead body and an electrode assembly electrically connected to its distal end, said lead system further including a removable guide sleeve covering said lead body, the distal end portion of said lead having an enlargement acting as a guide sleeve stop,

introducing said lead system, distal end first, into a blood vessel through a removable introducer sheath, *

removing the introducer sheath by severing it longitudinally while peeling it off of the lead system after a portion of the lead system has been inserted into the blood vessel,

driving the lead through the vascular system by pushing on

the proximal end of the sleeve so that the distal end of the sleeve abuts against the sleeve stop and forces the distal end portion of the lead forward, and

after attaining the desired location for the distal portion of the lead, removing the guide sleeve from the lead body by severing the guide sleeve longitudinally while pulling it off of the lead body.

4,585,014

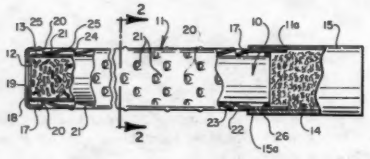
FIRE INHIBITING TUBULAR SAFETY SHIELD FOR A CIGARETTE TYPE SMOKING DEVICE AND COMBINATION THEREOF

Arnold H. Fry, 3182 Grey Fox Dr., Gahanna, Ohio 43230

Filed Aug. 1, 1983, Ser. No. 519,527

Int. Cl.[4] A24D *1/02, 1/12*

U.S. Cl. 131—175 **15 Claims**



1. A safety shield for use in combination with a tobacco article including a tobacco element of elongated, rod-like form having tobacco encased in a thin-walled, tubular sheath fabricated from a combustible material that is substantially impervious to airflow therethrough, the safety shield comprising

an elongated, structurally self-supporting thin-walled tubular shield adapted to receive the tobacco element interiorly therein in axially extending relationship and in spaced relationship to an interior wall surface of said shield to thereby form an annular chamber therebetween extending substantially the coextensive length of the tobacco element and said shield, said chamber being closed at an end thereof adjacent the end of the tobacco element from which smoke is to be inhaled, said shield being formed from an essentially non-combustible material having a structural strength sufficient to remain self-supporting when subjected to heat generated by combustion of the tobacco element and including

(a) a multiplicity of apertures formed in the wall thereof and distributed in relatively spaced relationship throughout substantially the entire shield wall that is coextensive with that portion of the tobacco element intended to be burned to enable passage of air and gaseous products of combustion therethrough relative to said annular space whereby air may freely circulate about the tobacco elements, and

(b) a multiplicity of non-resilient projections formed as elongated portions of the wall of said tubular shield immediately adjacent said apertures, said projections having a terminal end edge extending a distance radially inward of the interior wall surface of said shield to contactingly engage with the tobacco element, said projections distributed throughout substantially the entire extent of the shield wall that is coextensive with that portion of the tobacco element intended to be burned for support of the tobacco element and ash residue formed by combustion thereof in spaced relationship to the interior wall surface of said shield and thereby forming said annular chamber, said projections being of a configuration forming a surface to guide the inflow of air for purposes of assisting combustion and the exhaust of gaseous combustion products.

4,585,015

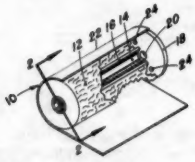
CIGARETTE FILTER

Donald A. Silberstein, LeMans, France, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 16, 1984, Ser. No. 672,053

Int. Cl.[4] A24D *3/04*

U.S. Cl. 131—339 **2 Claims**



2. A filter for a cigarette comprising:

a porous filter rod of cylindrical configuration;

a hollow tube fabricated of impervious material extending longitudinally through said filter rod from one end to the other end thereof defining a flow path for tobacco smoke;

a partition fabricated of smoke impervious material disposed at the end of said filter rod which interfaces with a tobacco column of the cigarette;

means defining an orifice through said smoke impervious partition coaxially disposed with the hollow tube and having a smaller cross-sectional area than the transverse cross-sectional area of the hollow tube for providing smoke flow communication between the tobacco column of the cigarette and said hollow tube in said filter rod and creating a pressure drop across said orifice; and,

means defining at least one orifice through the impervious partition for providing smoke flow communication between the porous filter rod and the tobacco column of the cigarette.

4,585,016

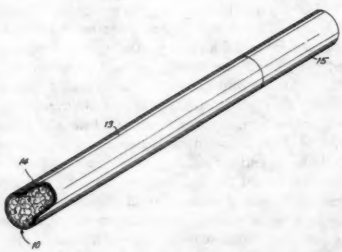
EXPANDED WEB OF SHEET MATERIAL AND METHOD OF MAKING SAME

Everett C. Grollimund, Midlothian, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 23, 1984, Ser. No. 613,159

Int. Cl.[4] A24D *1/00*

U.S. Cl. 131—361 **3 Claims**



1. A smoking article, comprising a rod of smoking material surrounded by a wrapper, the wrapper further comprising a laminate of an outer web of sheet material and an inner web of expanded sheet material, the inner web of expanded sheet material having a plurality of abutting rows of individual, periodic generally sinusoidal convolutions extending along the longitudinal axis of the rod, each individual convolution extending above and below a neutral zone corresponding to the original plane of the expanded sheet material and joined to the

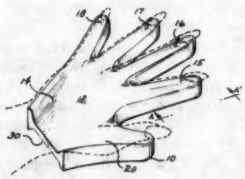
next succeeding individual convolution in each row by a web portion lying substantially in the neutral zone.

4,585,017

MANICURISTS HAND HOLDER

Josephine M. Trujillo, 2205 S. Lucille, Seattle, Wash. 98108

Filed Feb. 10, 1984, Ser. No. 579,116
Int. Cl.[4] A45D *29/00*
U.S. Cl. 132—73 15 Claims



1. Apparatus for supporting the digits of a human extremity for cosmetic treatment comprising:

a unitary piece having first and second surfaces on opposite sides thereof,

said first surface having recessed contours formed therein for receiving and supporting, in spaced relation, each of the digits of the right one of a left and right human extremity pair such that the nails on said digits are readily accessible for cosmetic treatment,

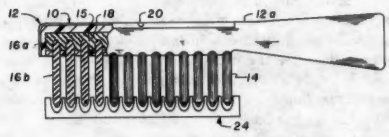
said second surface having recessed contours formed therein for receiving and supporting, in spaced relation, each of the digits of the left one of a left and right human extremity pair such that the nails on said digits are readily accessible for cosmetic treatment.

4,585,018

LIQUID DISPENSING COMB

Rodney J. O'Connor, College Station, Tex., assignor to Texas Romec, Inc., College Station, Tex.

Continuation-in-part of Ser. No. 447,297, Dec. 6, 1982. This application Mar. 19, 1984, Ser. No. 591,258
Int. Cl.[4] A45D *24/16*
U.S. Cl. 132—120 6 Claims



1. A liquid dispensing comb which comprises:

a comb backbone having:

an interior cavity enclosing a first porous material for containing liquid to be dispensed; and

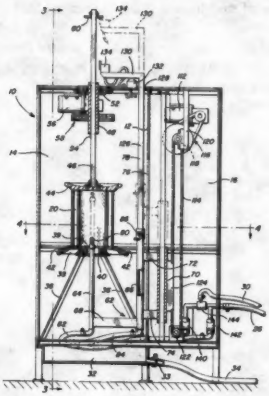
a plurality of teeth communicating with said cavity, wherein at least some of said teeth are of a second rigid porous wick-like material treated to control porosity of at least a portion of the shaft of said treated teeth and where flow of said liquid is substantially continuous when said comb is moved transversely over the skin of the animal to be treated, regardless of the orientation of said comb, whereby said liquid is applied simultaneously to hair and skin.

4,585,019

HEAVY DUTY AIR FILTER RECONDITIONING SYSTEM

Dwight W. Jacobson, 222 Westland Park Dr., Farmington, N. Mex. 87401

Filed Jun. 8, 1984, Ser. No. 619,310
Int. Cl.[4] B08B *3/02, 9/00*
U.S. Cl. 134—57 R 13 Claims



1. Apparatus for the spray cleaning of tubular filter elements and the like, comprising cabinet means defining a spraying chamber, support means in the chamber for a rotatable lower turntable disc, suspension means in the chamber for a vertically adjustable rotatable upper turntable disc, the upper and lower discs being adapted to grip a vertically oriented tubular filter element therebetween for rotation of the element by positioning the element on the lower disc and vertically adjusting the upper disc to engage the top of the element, drive means for rotating at least one of the discs to provide rotation of the filter element, and spray means in the chamber for cleaning at least one of the inner and outer surfaces of the filter element as it rotates, the apparatus including means associated with the cabinet means mounting the spray means for vertical reciprocation in the chamber to traverse the height of the filter element, second drive means for providing vertical reciprocation of the spray means, and control means for providing reversal of the spray means at levels corresponding to the height of a filter element being cleaned, wherein the control means comprises a lower level control mechanism having a fixed height related to the height of the lower turntable disc, and an upper level control mechanism operatively associated with the upper turntable disc for being positioned by the upper turntable disc at a height dependent on the height to which the upper turntable disc is adjusted.

4,585,020

SELF-CONTAINED TENT

Teruo Masuda, Tokyo; Masahiro Matsuzaki, Sayama, and Shoji Oshita, Tokyo, all of Japan, assignors to France Bed Co. Ltd., Tokyo, Japan

Filed Jun. 29, 1984, Ser. No. 626,412
Claims priority, application Japan, Jul. 8, 1983, 58-123491; Nov. 24, 1983, 58-181264[U]; Nov. 24, 1983, 58-181265[U]; Nov. 24, 1983, 58-181266[U]; Dec. 20, 1983, 58-194868[U]; Apr. 16, 1984, 59-75025; Apr. 16, 1984, 59-54706[U]
Int. Cl.[4] E04H *15/06, 15/30, 15/46*
U.S. Cl. 135—95 13 Claims

1. A self-contained tent, comprising:

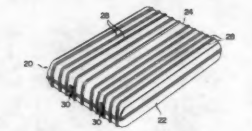
a flat case which can be freely opened or closed, said flat case including first and second halves, each of which has a plurality of hollow reinforcing ribs on the outer surface

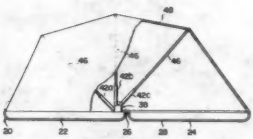
thereof, and hinge means for coupling adjacent ends of the first and second halves, the first and second halves being pivotable about an axis of the hinge means in opposite opening and closing directions;

heat-insulating material provided in the interiors of said hollow reinforcing ribs;

reinforcing plates disposed on the inner surfaces of the first and the second halves of said flat case, and on exposed portions of said heat-insulating material which fills the rib interiors;

a plurality of frame members held in said case, each of said frame members having two ends spaced apart along an axial direction of the hinge means;





connecting means for connecting the two ends of each frame member to the inner surface of at least one of the halves of said case so that said frame members can pivot in the opening/closing direction of said case;

a flexible bag-like tent sheet which has an edge and which can be held in said case while said flexible tent sheet covers said plurality of frame members, an inner surface of said flexible tent sheet being attached to said plurality of frame members, said flexible tent sheet covering said plurality of frame members so as to constitute a closed space above the first and second halves when the first and second halves are opened; and

seal means for liquid-tightly attaching the edge of said flexible tent sheet to peripheries of the first and second halves pivoted in the opposite directions.

4,585,021

GAS FLOW RATE CONTROL REGULATOR VALVE

James L. Belknap, Muncie, Ind., assignor to Maxon Corporation, Muncie, Ind.

Filed Feb. 13, 1984, Ser. No. 579,262
Int. Cl.[4] G05D *11/03*
U.S. Cl. 137—100 **13 Claims**

1. An improved gas flow rate control regulator valve for a gas burning furnace for maintaining an optimum precombustion air to gas mass ratio over a wide range of air and gas flows within the combustion chamber of the furnace for efficient burning therewithin, said regulator valve comprising:

a valve housing having a gas influent chamber,

a gas effluent chamber disposed for operative connection to said gas influent chamber and connected to the combustion chamber of the furnace, said valve housing containing at least one piston diaphragm chamber to define subchambers separated by a flexible diaphragm, at least one said piston chamber comprising a control piston chamber and disposed above said gas effluent chamber and communicating therewith;

a null point means chamber disposed generally above said top control piston chamber;

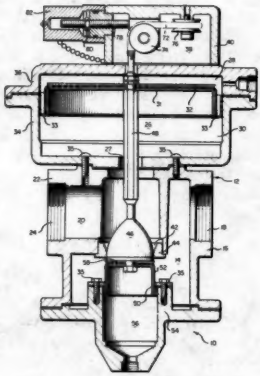
a valve orifice defined by a valve seat disposed between said gas influent chamber and said gas effluent chamber for flow of gas therethrough;

a valve plug movably disposed generally in spaced relationship to said valve orifice to open a variable transverse cross-sectional area of said valve orifice to flow of the gas influent stream therethrough at a variable flow rate proportional to the amount of transverse cross-sectional area of said valve orifice exposed by said movably disposed valve plug;

a valve stem connected to and supporting said valve plug for reciprocating an generally vertical motion of said valve plug relative to said valve orifice;

a piston disposed in each said piston chamber, said piston connected to and supported by said valve stem;

said flexible diaphragm articulating with a corresponding piston and sealingly disposed within each said piston chamber to define therein a lower subchamber and an upper subchamber, whereby an increase in the pressure of the fluid in each said upper subchamber tends to urge said valve plug downwardly to increase the open area of the valve orifice, to increase the flow of gas therethrough, and hence to increase the pressure fo the effluent gas flowing



through the valve and to the combustion chamber, and wereby an increase in the pressure of the fluid in each said lower subchamber tends to urge said valve plug upwardly to decrease the flow of gas through said valve orifice and hence to decrease the pressure of the effluent gas made available to the combustion chamber of the furnace, at least one said upper subchamber connected to the precombustion air, and at least one said lower subchamber connected to the effluent gas chamber;

a null point means for equalizing and balancing against the downward force of gravity, said null point means disposed within said null point means chamber above said top control piston chamber; and

a balancing pistion connected to and disposed in spaced relationship from the under surface of said valve plug, said balancing piston connected to a balancing diaphragm sealingly disposed within said influent gas chamber to define a balancing subchamber therebelow containing air, whereby the force of the influent gas on the under surface of the valve plug tending to urge the valve plug upwardly is compensated for by the downward force of the pressure of the gas contained within the influent chamber upon the balancing piston.

4,585,022

ARRANGEMENT FOR CLEANING FUEL WITH AN ELECTRICAL WATER LEVEL INDICATING DEVICE

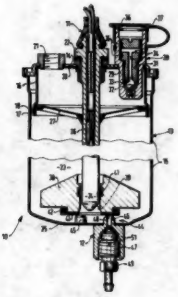
Wolfgang Haas, Stuttgart; Willi Müller, Sulz; Hans Schacht, Stuttgart, and Erich Scholz, Neuhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 497,737, May 24, 1983. This application Aug. 26, 1985, Ser. No. 770,002

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227200

Int. Cl.[4] B01D *17/025*

U.S. Cl. 137—172 8 Claims



1. An arrangement for cleaning fuel, comprising

a housing having a bottom, a fuel inlet, and a fuel outlet;

a deflecting member located in the interior of said housing and forming together with the latter an annular gap expending between said fuel inlet and said fuel outlet, and also forming a water storing chamber separated from said fuel inlet;

electrical water level indicating means including a stationary rod-shaped impulse generator having an axis and extending through said deflecting member into the interior of said water storing chamber, and a movable one-piece float located in said water storing chamber and guided by said rod-shape impulse generator;

water discharge means provided with a throttle valve which includes a water discharge opening formed in said bottom of said housing and a throttle valve member cooperating with and controlling said water discharge opening, said float forming said throttle valve member and having a central axis coinciding with said axis of said rod-like impulse generator and a central guide opening coaxial with said central axis, said float forming said throttle valve member also having a closing surface cooperating with and controlling said water discharge opening, said central guide opening going completely through said float and said rod-shaped impulse generator extending into said throughgoing central guide opening in condition of the closed throttle valve so as to guide said float in said housing, and said closing surface and said water discharge opening being radially offset relative to said throughgoing central guide opening, so that said float is guided in said housing centrally of said float and controls said discharge opening off-centrally of said float.

4,585,023

PACKING-RESISTANT VALVE

Edward M. Almada, 7537 Linden St., Hammond, Ind. 46224

Filed Jul. 25, 1984, Ser. No. 634,140

Int. Cl.[4] F16K *3/36*

U.S. Cl. 137—240 6 Claims

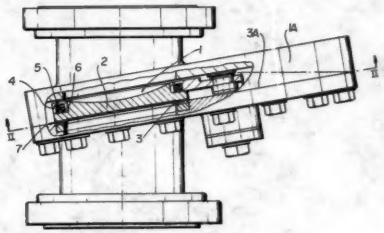
1. A packing-resistant gate valve, comprising:

an inlet;

an outlet, said inlet and outlet being arranged along a first axis;

a valve body interposed between and in fluid communication with said inlet and said outlet, said valve body comprising a substantially flat fluid-tight hollow chamber, a main plane of said flat hollow chamber extending transverse to said first axis and being angled about 10° away from perpendicular to said axis;

gate means rotatably mounted within said valve body substantially in said plane, said gate means being rotatable between an open position allowing fluid flow between said inlet and said outlet and a closed position preventing



fluid flow between said inlet and said outlet, said gate means having inlet and outlet faces on sides thereof disposed towards said inlet and said outlet, respectively, said inlet face of said gate means comprising a first concave recess for inducing eddy currents in fluid flow impinging thereon when said gate is in said closed position, thereby directing fluid away from said valve body to reduce the tendency of material in said fluid to accumulate within said valve body; and

said hollow chamber of said valve body further comprising a space in which a pressurized air pocket can form upon closing of said gate means, such that air in said pocket will flush said valve body when said gate means is opened.

4,585,024

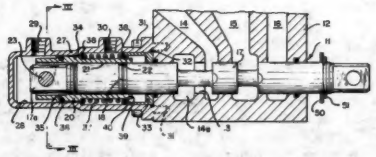
AIR SHIFT CONVERSION APPARATUS FOR MANUAL VALVES

Alexander J. Esseniyi, Boardman, Ohio, assignor to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 28, 1984, Ser. No. 644,991

Int. Cl.[4] F15B *13/042*

U.S. Cl. 137—269 8 Claims



1. An air actuator device for manually operable hydraulic valves having a valve spool moving longitudinally in a bore in a valve housing, said spool having an integral engagement means at one end for normal engagement by a manual actuator comprising piston means surrounding the engagement means of said spool end, fastener means fastening said piston means surrounding said engagement means, an actuator housing having a cylindrical bore surrounding and slidably receiving said piston means and spool end and adapted to be fixed on the valve housing around the piston means, spaced openings in said actuator housing communicating with said bore whereby control air may be introduced into said bore to act on opposite side of said piston means and resilient means surrounding a portion

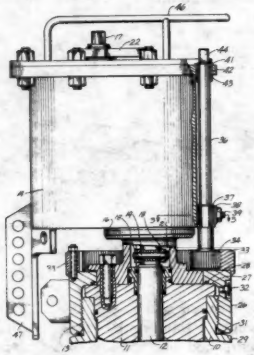
of said piston normally urging said piston and the valve spool to a closed position.

4,585,025

MOUNTING FOR A VALVE ACTUATOR

Fred W. Hendrick, Long Beach, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jul. 12, 1985, Ser. No. 754,239
Int. Cl.[4] F16K *43/00*
U.S. Cl. 137—315 **5 Claims**



1. Apparatus for mounting an actuator on a valve body comprising:
a valve body having a threaded open end;
valve operating trim insertable into the valve body;
a valve actuator connected to the valve operating trim;
a nut connected to the actuator and free to rotate relative to the actuator while mating with the threaded open end on the valve body;
a first larger gear secured on the nut;
a second smaller gear for driving the first gear with a mechanical advantage; and
means for driving the second gear for rotating the nut relative to the valve body for directly assemblying the actuator and the nut to the valve body.

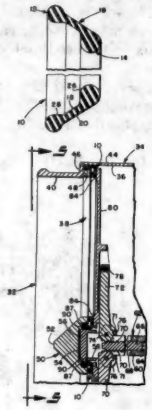
4,585,026

SEAL FOR COUPLING OR VALVE ASSEMBLIES

Jack R. Norton, Elyria, Ohio, assignor to Lear Siegler, Inc., Elyria, Ohio

Filed Oct. 30, 1980, Ser. No. 202,306
Int. Cl.[4] F16K *15/03, 25/00*; F16J *15/48*
U.S. Cl. 137—512.1 **27 Claims**

13. A coupling or the like comprising a housing having a passage therein, an annular seal in said housing surrounding said passage, said seal including two radially and axially offset annular sealing members and a relatively long annular folding web integrally joining said sealing members, said web having radially inner and outer parallel surfaces which when in the relaxed condition are inclined to the axis of said seal, said sealing members being substantially circular in cross-sectional shape, the radially outer surface of said web at its radially inner end forming a substantially straight tangential continuation of the curved outer surface of the radially inner one of said sealing members, means for retaining the radially outer one of said sealing members in sealed engagement with said housing, and valve means movable into sealing engagement with said radially inner sealing member for closing said passage, said valve means having a substantially flat radially extending sealing surface, said web folding upon itself when said radially inner sealing member is engaged by said sealing surface of said valve means to cause the radially outer surface of said web at its radially inner end and said radially inner sealing member to remain in sealing engagement with said sealing surface of said



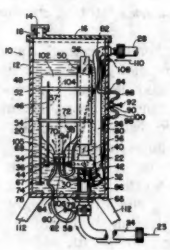
valve means while accommodating any adverse tolerance conditions.

4,585,027

SELF-CYCLING WATER CONTROL

Fredrick K. Stillions, 765 N. Gibbs, Pomona, Calif. 91767

Filed May 29, 1984, Ser. No. 614,537
Int. Cl.[4] F16K *31/00*
U.S. Cl. 137—624.11 **14 Claims**



1. A cycling, fluid control valve device including:
fluid inlet means;
fluid outlet means having a location therein where flow of fluid therethrough produces a first pressure;
a main control valve connected between said fluid inlet means and said fluid outlet means, said main control valve having:
an open position;
a closed position; and
mechanical means to change said main control valve between said open and closed positions;
an actuation container connected to said mechanical means so that vertical movement of said actuation container changes said main control valve between said open and closed positions, said actuation container having an internal pressure greater than said first pressure;
first metering valve means connected to provide a flow path from said fluid inlet means to said actuation container so that the fluid can fill the actuation container and increase its weight;
second metering valve means connected to provide a flow path from said fluid outlet means location where flow of

fluid therethrough produces said first pressure to said actuation container so that the fluid is forced out of said actuation container by said internal pressure to decrease its weight; and

means to bias said actuation container upwardly having a force magnitude which can be overcome by the weight of a predetermined amount of fluid in said actuation container, whereby said first metering valve means control the time said main control valve is in its closed position and said second metering valve means control the time said main control valve is in its open position, said means to bias said actuation container upwardly including:

a tank having therein a fluid of predetermined density in which said actuation container is at least partially submerged.

4,585,028

MOTOR-DRIVEN PROPORTIONAL FLUID FLOW CONTROL VALVE

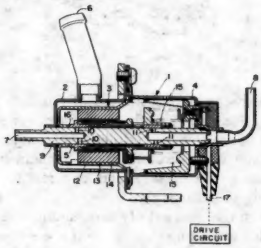
Yasuhiro Kawabata, Anjyo; Shoji Ito; Noriyoshi Shibata, both of Nagoya; Mitsunori Sasano, and Fusaji Ohmura, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 20, 1983, Ser. No. 533,945

Claims priority, application Japan, Sep. 21, 1982, 57-163249

Int. Cl.⁴ F16K *31/04, 31/08*

U.S. Cl. 137—625.48 **3 Claims**



1. A motor-driven proportional fluid flow control valve comprising:

(a) a casing having an inlet port;

(b) a linear motor housed in said casing and including an iron core having first and second outlet ports, first and second passages in said core, a slide valve body slidably movable on said iron core for selectively providing communication between said inlet port and said first and second passages, respectively, an electromagnetic coil on said slide valve body, and a plurality of permanent magnets disposed adjacent to said electromagnetic coil;

(c) a stop surface in said casing;

(d) a coil spring disposed in said casing for normally urging said slide valve toward said stop surface to close said first and second passages; and

(e) electrical means for passing a first constant current through said electromagnetic coil for generating an electromagnetic field having a first intensity for maintaining said slide valve body in spaced relation to said stop surface for reducing noise during valve operation caused by contact between said slide valve body and said stop surface, while maintaining said first passage closed, and for passing a second current through said electromagnetic coil for generating an electromagnetic field having a second intensity greater than said first electromagnetic field for opening said first passage.

4,585,029

ELFCTRO-HYDRAULIC SERVO VALVE

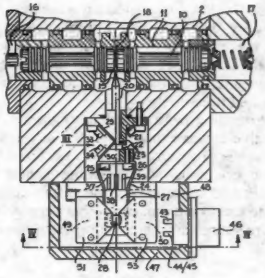
John K. Harding, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, England

Filed Feb. 5, 1985, Ser. No. 698,603

Claims priority, application United Kingdom, Feb. 17, 1984, 8404169

Int. Cl.⁴ F15B *13/043*

U.S. Cl. 137—625.62 **7 Claims**



1. An electro-hydraulic servo valve including a casing, a valve means forming a first stage of the servo valve and operable by an electrical force motor itself connected to receive an electrical command signal, a displaceable element, forming a second stage of the servo valve, which is movable within said casing by fluid-pressure applied thereto under the control of said first stage valve means when operated by said force motor, a beam mounted upon a system of leaf springs for swinging movement with respect to said casing and about a ring itself carried in a beam-supporting housing, one portion of said beam being engaged with said displaceable element and another portion of said beam carrying an electrical sensor through which an electrical current is caused to pass, and magnet means housed in said casing adjacent said other portion of said beam so that as, on controlled movement of said displaceable element, said beam swings, the positional relationship of said sensor, with respect to magnetic fields inherent in said magnet means, changes, thus to so vary electrical potential across said sensor that an electrical feedback signal is emitted by said sensor which signal is proportional to the displacement of said displaceable element.

4,585,030

PROPORTIONAL HYDRAULIC SOLENOID CONTROLLER

Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 6, 1984, Ser. No. 597,303

Int. Cl.⁴ F15B *13/043*

U.S. Cl. 137—625.64 **7 Claims**

1. A proportional, fluid-pressure control valve assembly for control of fluid pressure between a variable fluid pressure source and a sump through a fluid return conduit, which controlled fluid pressure is bounded by a predetermined lower limit and the maximum pressure of said variable fluid pressure source, and which controlled pressure is applied to a regulated, fluid-pressure operable device, said valve assembly comprising:

a housing defining a cavity having a diaphragm operator with a predetermined surface area positioned in said cavity and cooperating with said housing to define a first chamber and a second chamber, said housing further defining a fluid control port communicating between said first chamber and said sump and a reference fluid pressure

port communicating between said second chamber and a fluid source at a reference pressure;

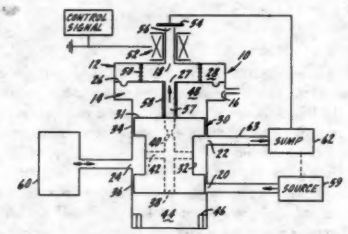
said housing defining a fluid source port communicating between said cavity and said variable fluid pressure source, and a servo mechanism port communicating between said cavity and said fluid-pressure operable device;

said housing defining a sump port communicating between said cavity and said sump return conduit;

valve means with an exposed surface of a predetermined surface area positioned in said cavity and operable to provide fluid at a regulated pressure at said servo mechanism port by regulating communication between said servo mechanism port and one of said fluid source port and said sump port, said valve means cooperating with said housing to define a third chamber for a fluid at said controlled pressure;

an arm extending from said diaphragm operator to contact said valve means exposed surface;

biasing means provided between said housing and said diaphragm operator, which biasing means is operable to maintain said valve means open at a reference position to provide fluid communication between said variable fluid pressure source and said fluid-pressure operable device;



said valve means defining a first passage with an orifice therein, which first passage communicates through said valve means between said third chamber and said first chamber;

said valve means further defining a second passage to communicate between said cavity and said first passage to provide fluid at a regulated pressure to said first and third chambers;

a proportional solenoid operator connected between said fluid control port and said sump to regulate fluid communication between said sump and fluid control port;

wherein said diaphragm operator mechanically acts to move said valve means as a function of the ratio of the diaphragm surface area to said valve means surface area and the fluid pressure in said third chamber such that the fluid pressure in said first chamber communicating with the fluid control port is controllable by said solenoid operator to thus provide fluid pressure to said fluid-pressure operable device at any pressure level between said predetermined lower limit and said maximum pressure as a function of electrical current input to said solenoid operator, and to block fluid flow from the pressure source through said fluid source port.

4,585,031

INVERSION-RESISTANT TIDE GATE VALVE

Spiros G. Raftis, Pittsburgh, Pa., and George W. Merritt, Akron, Ohio, assignors to Red Valve Co., Inc., Carnegie, Pa.

Filed Jul. 12, 1985, Ser. No. 754,819
Int. Cl.[4] F16K *15/16*
U.S. Cl. 137—846 **7 Claims**

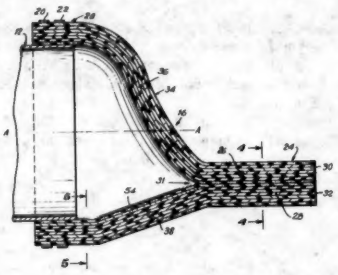
1. An inversion-resistant tide gate valve for sewage conduits, particularly for large-sized storm sewer pipes, comprising:

(a) a sleeve bounding a longitudinally-extending, flow-through passage for sewage fluids,

(b) said sleeve having an upstream fluid inlet end region mountable on a discharge end of a sewage conduit which is elongated along a longitudinal axis of symmetry,

(c) said sleeve having a downstream fluid outlet end region which has an upper and a lower lip opposed to each other and located in an offset position to one side of the symmetry axis, said lips being movable from a closed to an open condition in which the lips respectively sealingly engage, and are located away from, each other in response to a pressure head exerted in a direction downstream of the passage,

(d) said sleeve having a tapered intermediate region located between the inlet and the outlet regions having an upper and a lower body wall which respectively merge and are respectively movable with the upper and the lower lips, said upper body wall and upper lip being movable in a radial direction through a predetermined distance which is larger than the distance through which the lower body wall and the lower lip are movable,



(e) said sleeve being constituted of multiple plies, each extending along the length of the inlet, tapered and outlet regions of the sleeve, said plies including

(i) an inner wear-resistant ply of resilient sealing material bounding the passage and exposed to sewage fluids passing therethrough,

(ii) at least one support ply surrounding the wear-resistant ply, for imparting support to the sleeve to maintain the lips in the offset position and to prevent the lips from sagging from the offset position, and for imparting strength to the sleeve to prevent the lips from inverting in response to a back pressure exerted in a direction upstream of the passage,

(iii) at least one reinforcing ply surrounding the wear-resistant ply, for reinforcing the sleeve and preventing the pressure head within the passage from outwardly deforming the sleeve, and

(iv) an outer protective ply surrounding the wear-resistant, support and reinforcing plies for protecting the same.

4,585,032

MOTOR OPERATED TANDEM VALVE ASSEMBLY

H. Peter van Lingen, Marlboro, Mass., assignor to Asahi/America, Inc., Medford, Mass.

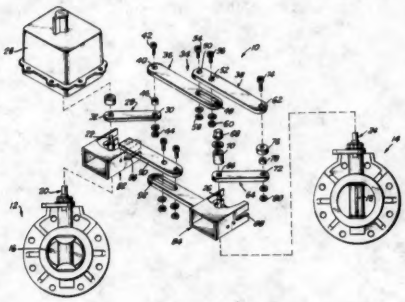
Filed Nov. 14, 1984, Ser. No. 671,478
Int. Cl.[4] F16K *11/22, 31/52, 31/04*
U.S. Cl. 137—862 **3 Claims**

1. An assembly for simultaneously operating first and second thermoplastic valves, each said valve including a valve stem rotationally mounted in said valve and fixedly connected to restriction means for selectively blocking or permitting the flow of fluid through the corresponding valve, said assembly comprising:

first and second substantially identical elongated valve stem levers fixedly mounted perpendicularly to the valve stems of said first and second valves respectively;

a rigid elongated connecting bar assembly having opposed ends pivotally connected respectively to said first and second valve stem levers;

first and second housings securely mounted to said first and second valves respectively, said first and second housings being dimensioned and located to at least partly enclose the connection of the first and second valves stem levers respectively to their associated valve stems, said first and second housings including a slot through which the first



and second valve stem levers respectively rotate, said slot being dimensioned to define the rotational limits of said first and second valve stem levers; and

a support rigidly and non-rotationally mounted to both said first and second housings and extending therebetween, whereby rotation of the valve stem and valve stem lever of the first valve causes the connecting bar assembly to effect an equal rotation of the valve stem lever and valve stem of the second valve, and whereby the support limits the movement in the second valve to the valve.

4,585,033

EQUIPMENT FOR CLOSING CONDUITS

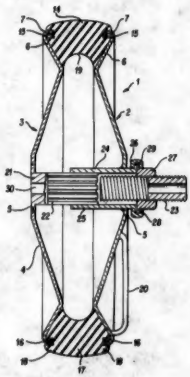
Stig Westman, Rafsvagen 22, S-740 40 Heby, Sweden

Filed Oct. 3, 1984, Ser. No. 657,169

Claims priority, application Sweden, Oct. 13, 1983, 8305640

Int. Cl.[4] F16L *55/12*

U.S. Cl. 138—89 **2 Claims**



1. Equipment for closing a conduit, preferably a waste water conduit disposed in the ground, comprising a closing lid which comprises a first circular disk, and a second circular disk having a hole which extends therethrough, a stud having one end rigidly secured to said first circular disk and an opposite end which extends towards said second circular disk, a tubular sleeve rigidly secured to said second circular disk at said hole and extending towards said first circular disk, said tubular sleeve being provided with splines which extend along said sleeve internal thereof, said stud having a threaded portion at said opposite end and being provided with splines which extend along said stud between said one end and said threaded portion, said opposite end of said stud extending through said sleeve and said hole and said splines of said stud cooperating with said splines of said tubular sleeve, a sealing ring of resilient material positioned between said first and second circular disks and extending around the periphery thereof, and means threaded upon said threaded portion and being axially attached to, and rotatable relative to said second circular disk for axially urging said disks relative to each other so that said disks are urged straight against each other without inclination or shifting of one of said disks relative to the other causing said sealing ring to be directed radially outwardly into sealing engagement with said conduit.

4,585,034

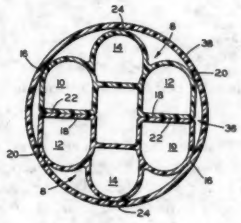
APPARATUS FOR CONVERTING A SINGLE CHAMBERED CONDUIT TO A MULTI-CHAMBERED CONDUIT

Charles E. Hubbard, Harper Woods, and Donald E. Berkemeier, Bloomfield Hills, both of Mich., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation-in-part of Ser. No. 557,841, Dec. 5, 1983, abandoned. This application Jul. 24, 1985, Ser. No. 758,408

Int. Cl.[4] F16L *9/18*

U.S. Cl. 138—111 **3 Claims**



1. A multi-chambered conduit assembly comprising:

an outer conduit of generally annular cross-sectional configuration having a longitudinally extending internal passageway provided with an internal supporting surface; and

a first and second insert, each of said inserts including spaced-apart, longitudinally extending parallel first and second chambers, the cross-sectional configuration of each chamber defined by first and second generally parallel side walls joined at one of the respective edges thereof by a third wall and joined at the opposite edges thereof by a base wall; and means for connecting a side wall of the first chamber to a side wall of the second chamber, said first and second inserts positioned in back-to-back relationship wherein the base wall of the first chamber of said first insert is adjacent the base wall of the second chamber of said second insert and the base wall of the second chamber of said first insert is adjacent the base wall of the first chamber of said second insert, said first and second inserts positioned within the internal passageway of said outer conduit such that the outer surface of the third wall of each of the chambers is adjacent to the inner supporting surface of the internal passageway of said outer conduit, each of the third walls having an outer surface configuration wherein if such third wall contacts the inner supporting surface of said conduit such contact is a singular line contact between such third wall and the inner supporting

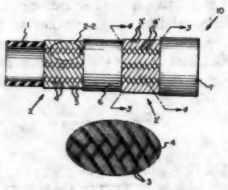
surface of said outer conduit, whereby frictional contact between said insert and the inner supporting surface of said outer conduit is minimized when said insert is inserted into said conduit.

4,585,035

REINFORCED HOSE

Dante E. Piccoli, Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 19, 1983, Ser. No. 562,884
Int. Cl.[4] F16L *11/04*
U.S. Cl. 138—127 **5 Claims**



1. A flexible hose comprising:
(a) a radially innermost elastomeric tube;
(b) a first braided spiral sleeve surrounding the elastomeric tube;
(c) a second braided spiral sleeve disposed radially outwardly of the first braided spiral sleeve; and
(d) an elastomeric insulating layer interposed between the first and second braided spiral sleeves, each braided spiral sleeve having a first braid member and a second braid member under equal tension, said first braid being composed of at least one strand of wire helically wound about said elastomeric tube in a smooth helical path to form a continuous flat spiral having the form of an annular ring with a thickness equal to the diameter of the wire when viewed in radial cross-section, said second braid member being composed of a single yarn with greater flexibility than said first braid and having filaments with a tenacity of at least 12 grams/denier and an elongation of less than 7% wound oppositely of said first braid member and interwoven with said first braid member such that there is minimal disruption of the annular ring of the first braid member and said second braid member is crimped at each point of contact with said first braid and said first braid remains uncrimped at each point of contact.

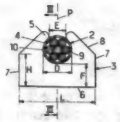
4,585,036

DISTRIBUTION ELEMENTS PLACED BETWEEN BINDINGS AND THE BODIES BOUND THEREBY

Pierre Jartoux, Epernon, France, assignor to Freyssinet International, Billancourt, France

Filed Apr. 27, 1984, Ser. No. 604,579
Claims priority, application France, May 3, 1983, 83 07357
Int. Cl.[4] F16L *11/12*
U.S. Cl. 138—172 **7 Claims**

1. A reinforced structure comprising;
a tubular body,
a tensioned binding cable extending circumferentially around the body and exerting a reinforcing force against the exterior surface of the body,
a plurality of pressure distributing elements interposed between the cable and the body to distribute said reinforcing force exerted by the cable on the body,
each element formed as a solid bar of resilient material, said bar having an outer face located against the outer surface of the body, the resiliency of the material allowing the bar to form to the shape of the exterior surface of the body, the cross section of the bar, transverse to the cable, having



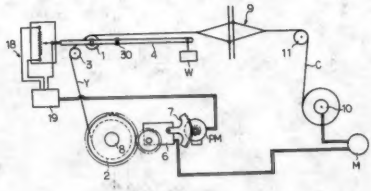
a shape of a thick symmetrical C with a constricted opening, the base of the C forming said outer face, and the interior of the C forming a groove which receives the cable and which lies on a circle, the diameter of which circle is generally equal to the diameter of the cable, and wherein the opening into the groove between the spaced apart lips of the C is slightly less than the diameter of the cable, the resiliency of the material being sufficient to permit the lips to separate elastically to receive the cable and to elastically return against the cable.

4,585,037

METHOD OF REGULATING WARP YARN TENSION IN A WEAVING MACHINE

Masahiko Kimbara, Okazaki, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Nov. 21, 1983, Ser. No. 553,756
Claims priority, application Japan, Nov. 27, 1982, 57-208090
Int. Cl.[4] D03D *49/04*
U.S. Cl. 139—1 E **7 Claims**



1. A method of regulating the tension of warp yarns in a reversible weaving machine when operated in its forward direction and in its reversed direction and which includes a means for tensioning the warp yarns including means in pressing contact therewith, said tensioning means being movable with a change in the tension of the warp yarns, a warp beam rotatable in both warp yarn unwinding and warp yarn rewinding directions at variable speed, respectively, and a reversible speed change unit with variable speed change ratio for driving

said warp beam in either direction, said method comprising the steps of:

when said weaving machine is operated in its said forward direction, normally driving said speed change unit in one direction while retaining a shiftable selector of said tensioning means in one position of engagement for varying the speed of said speed change unit responsive to the distance and direction of movement of said yarn pressing means to adjust the speed of said warp beam in its unwinding rotation whereby said unwinding rotation of the warp beam is decelerated with a decrease in the warp yarn tension and accelerated with an increase in said tension; and

when said weaving machine is operated in its said reversed direction, driving said speed change unit in opposite direction and shifting said shiftable selector of said tensioning means to a second engagement position for varying the speed of said speed change unit responsive to the distance and direction of movement of said yarn pressing means to adjust the speed of the same said warp beam in its rewinding rotation whereby said rewinding rotation of the warp beam is accelerated with a decrease in the warp yarn tension and decelerated with an increase in said tension.

4,585,038

AUXILIARY BLOW NOZZLE FOR A PNEUMATIC WEAVING MACHINE

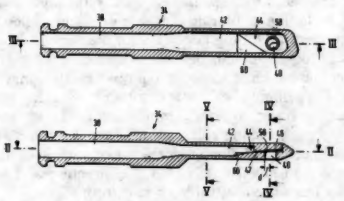
Charles Knisely, Karlsruhe, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 4, 1984, Ser. No. 677,863

Claims priority, application European Pat. Off., Dec. 9, 1983, 83810580.7

Int. Cl.[4] D03D *47/28*

U.S. Cl. 139—435 **14 Claims**



1. An auxiliary blow nozzle for a pneumatic weaving machine, said nozzle having

an inlet duct for conveying a flow of air longitudinally thereof,

an exit port disposed at an end zone of said inlet duct and at an angle to said inlet duct; and

at least one flat rib extending parallel to said duct in said end zone and adjacent said exit port.

4,585,039

GAS-COMPRESSING SYSTEM

Richard A. Hamilton, 17203 SE. Cougar Mountain Dr., Issaquah, Wash. 98027

Filed Feb. 2, 1984, Ser. No. 576,190

Int. Cl.[4] B65B *31/00*

U.S. Cl. 141—47 **12 Claims**

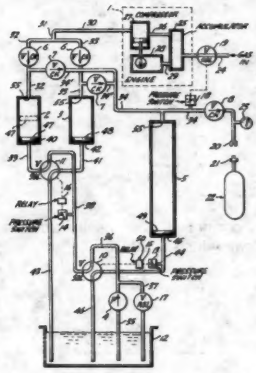
1. In a gas-compressing system:

a first working cylinder;

a second working cylinder;

a gas-supplying component for introducing gas into said first working cylinder when the pressure of gas in said first working cylinder is below the pressure of the gas supplied by said gas-supplying component and including means for introducing gas into said second working cylinder when the pressure of gas in said second working cylinder is below the pressure of the gas supplied by the gas-supplying component;

liquid control means for alternately introducing liquid into said first working cylinder for forcing gas from it and draining liquid from said first working cylinder so as to cause said first working cylinder to be refilled with gas from said gas-supplying component, said liquid control means including means for introducing liquid into said second working cylinder for forcing gas from it as liquid is drained from said first working cylinder and for draining liquid from said second working cylinder as liquid is introduced into said first working cylinder;



means preventing backflow of gas from said first and second working cylinders to said gas-supplying component as gas is forced from said working cylinders;

a storage cylinder;

means directing the gas forced from said working cylinders into said storage cylinder; and

means preventing backflow of gas from said storage cylinder to said working cylinders, whereby said storage cylinder alternately has gas forced into it from said first working cylinder and said second working cylinder.

4,585,040

METHOD AND APPARATUS FOR DISPENSING PRODUCT UPON SUBJACENT OBJECTS

Clarence W. Cramer, Burlington, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Feb. 4, 1985, Ser. No. 697,782

Int. Cl.[4] B65B *3/04*

U.S. Cl. 141—137 **12 Claims**

1. Apparatus for providing a controlled flow of product onto a moving object, comprising:

a hopper for receiving and storing said product in flowable form, said hopper having an exit passage at its lower end;

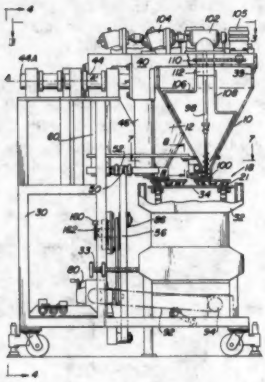
means for maintaining said object in continuous motion in a predetermined direction along a path extending beneath said exit passage;

auger means in said passage rotatable to dispense product downward through said passage;

means for providing said hopper with an oscillatory angular motion about an axis transverse to said path so that said exit passage passes over said object while moving along the direction of motion of said object, during at least a portion of said oscillatory angular motion of said hopper; and

motor means synchronized with said motion of said hopper

for operating said auger means momentarily so as to dispense said product from said exit passage only while said



passage is positioned substantially directly above, and moving along with, said object.

4,585,041

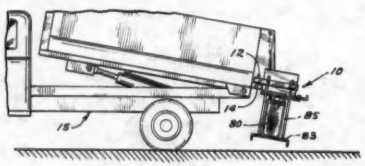
BAG FILLING APPARATUS

Leo J. Cavanagh, 8011 - 60 1/2 Avenue North, New Hope, Minn. 55428

Filed Nov. 19, 1984, Ser. No. 672,458

Int. Cl.[4] B65B 1/06

U.S. Cl. 141—231 **1 Claim**



1. A portable bag filling apparatus, having in combination

a supply hopper having a bottom wall and having in board downwardly inclined end walls and at least one side wall, said walls serving as deflection plates,

said bottom wall having openings therein,

a plurality of chutes discharging from said openings in said bottom wall,

an elongated plate member apertured to have openings in register with said openings in said bottom wall in one position and out of register therewith in an alternate position, and

transverse members disposed across said bottom of said hopper and respectively overlying said openings in said bottom and having openings in register with said openings in said bottom in one position and out of register therewith in an alternate position, and

bag holding means carried by said chutes.

4,585,042

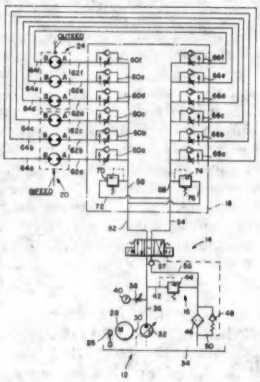
LOG DEBARKER

James H. Hutson, Rte. 4, P.O. Box 925, Pell City, Ala. 35125

Continuation-in-part of Ser. No. 430,794, Sep. 30, 1982, Pat. No. 4,522,242. This application Aug. 30, 1983, Ser. No. 527,814

Int. Cl.[4] B27L 1/00

U.S. Cl. 144—208 E **36 Claims**



13. A log debarker comprising:

a frame,

a stator supported by said frame,

a rotor journaled in said stator for rotation about a longitudinal axis,

a plurality of debarking tools attached to said rotor,

a feeding means for feedng logs axially through said rotor and including a plurality of log-gripping roller means positioned for rolling contact with the logs,

each said log-gripping roller means including a log-gripping roller and a hydraulic motor and operatively connected to said log-gripping roller for rotating said log-gripping roller, each said hydraulic motor being adapted to rotate its said log-gripping roller at different and variable rotational speeds to accommodate logs of uneven surfaces,

a reversing means for reversing the direction said feeding means feeds the logs through said rotor,

said reversing means including a flow reversing means for reversing the flow of hydraulic fluid through each said hydraulic motor, and

a supplying means for supplying hydraulic fluid to each said hydraulic motor and supplying the same general fluid pressure to each said hydraulic motor when said feeding means is operating in either direction.

4,585,043

TURNING TOOL FOR TURNING WOODEN WORKPIECES

Erich Schmidt, Mauerbach, Austria, assignor to MZW Maschinenfabrik GmbH, Vienna, Austria

Filed Dec. 29, 1983, Ser. No. 566,821

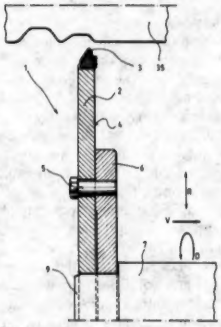
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1982, 3248702

Int. Cl.[4] B27G 15/00

U.S. Cl. 144—218 **6 Claims**

1. A turning tool for turning wooden workpieces, comprising a turning disk fixedly mounted on a rotatable drive shaft and movable in an axial feed direction, said disk including a plurality of carbide cutting teeth separated from one another by respective tooth spaces, each said cutting tooth having at least two different cutting configurations, one configuration comprising profile cutters having peripheral, end, and lateral cutting edges, said peripheral cutting edge being generally

conical and offset with respect to the center plane of the disk and forming an accurate contour to said lateral cutting edges and another configuration comprising chip cutters having a peripheral cutting edge and an end cutting edge, said end cutting edge terminating at said peripheral cutting edge and forming an acute angle therewith, said profile cutters being located on the periphery of the teeth with the chip cutters being located, relative to said profile cutters, in a radially inward and axially forward offset position with respect to the



axial feed direction of the disk, whereby the chip cutters engage the workpiece before the profile cutters, each of said profile cutters being integral with its associated chip cutter and both having a common flat front surface relative to the direction of rotation of the disk, said front surface of each tooth forming, at least in part, the trailing wall of the preceding toothspace with each tooth space being open-ended on both sides and extending over the width of the turning disk and each cutting tooth being inclined in the direction of said front surface, said direction being the rotation direction of the tool.

4,585,044

TUBULAR TIRE FOR CYCLES

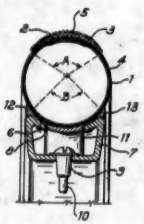
Cesare Carrera, Milan, and Giuseppe Formenti, Motta Visconti, both of Italy, assignors to Pneumatici Clement S.p.A., Milan, Italy

Filed Dec. 21, 1982, Ser. No. 451,746

Claims priority, application Italy, Dec. 23, 1981, 25806 A/81; May 28, 1982, 21557 A/82

Int. Cl.⁴ B60C *5/00, 3/02*

U.S. Cl. 152—165 **12 Claims**



1. A tubular tire for cycles comprising a tire body formed by at least one band of rubberized fabric including reinforcement threads, the side eddges of said band being longitudinally joined together to form a carcass or tubular element, a toroidal inner tube of an elastomeric material wholly and irremovably enclosed thereinto adapted to provide an air tube for inflating the tire, and a tread disposed on the outer circumference of said tire body, the tubular tire being characterized in that the junction of said edges is accomplished at a position that is radially outward under the tire tread, said tire tread being placed in correspondence of said junction and that a rubberized tape having a plurality of circumferential projections is provided on the inner circumference of the tire facing the wheel rim for the engagement with said wheel rim.

4,585,045

PNEUMATIC TIRE FOR PASSENGER CAR

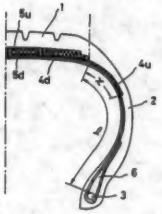
Tuneo Morikawa, and Kazuyuki Kabe, both of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1984, Ser. No. 604,513

Claims priority, application Japan, May 11, 1983, 58-80947

Int. Cl.⁴ B60C *9/06, 9/20, 9/26*

U.S. Cl. 152—536 **4 Claims**



1. In a pneumatic tire comprising a tread, side walls extending from both sides of said tread and containing bead wires, a carcass cord layer and at least two belt reinforcing layers disposed between said tread and said carcass cord layer, reinforcing cord of one of said belt reinforcing layers having an angle of 15 to 30 degrees with respect to tire circumferential direction and reinforcing cord of said other belt reinforcing layer having an angle of 150 to 165 degrees with respect to tire circumferential direction and said carcass cord layer comprising a laminate of upper and lower carcass cord layers and the average value $\frac{1}{2}(\alpha_1+\alpha_2)$ of the angle α_2 of reinforcing cord of said upper carcass cord layer adjacent said belt reinforcing layers with respect to tire circumferential direction and the angle α_1 of reinforcing cord of said lower carcass cord layer with respect to tire circumferential direction is from 96 to 108 degrees and their difference $(\alpha_2-\alpha_1)$ is from 10 to 40 degrees when measured from the side in which the angle of the reinforcing cords of said belt reinforcing layer adjacent said carcass cord layer describes an acute angle with respect to the tire circumferential direction; the improvement comprising said upper carcass cord layer comprising polyester and said lower carcass cord layer comprising nylon with both ends of said upper carcass cord layer extending from both ends of said belt reinforcing layer toward said bead wires but not being turned up around said bead wires and both ends of said lower carcass cord layer being turned up from inside to outside around said bead wires and surface creep distance x of said upper carcass cord layer from the end of said belt reinforcing layer to the end thereof and the surface creep distance l of said lower carcass cord layer from the end of said belt reinforcing layer to the upper end of said bead wire satisfy the relation $x/l=0.2\sim0.9$.

4,585,046

APPARATUS FOR TRUING A SPOKED WHEEL

Ronald E. Buckley, 3057 Wachter Ave., Lower Burrell, Pa. 15068

Filed Oct. 24, 1984, Ser. No. 664,220

Int. Cl.⁴ B21K *1/34*

U.S. Cl. 157—1.55 **17 Claims**

1. A spoked wheel truing machine, comprising:

means associated with the axle of said wheel for supporting said wheel, said supporting means being arranged to sup-

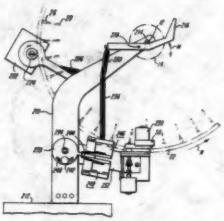
port said wheel with the central axis of said axle being disposed is a generally horizontal plane;

first means for rotating said wheel about said central axis of said axle;

means for temporarily preventing said wheel from rotating about said central axis when the rim of said wheel is at one of a preselected plurality of arcuate positions;

means for indicating locations of said rim at which said rim deviates from a predetermined plane perpendicular to said central axis of said axle;

second means for rotating a nipple of said wheel about the centerline of a spoke that is associated with said nipple, said second rotating means being shaped to engage the outer surface of said nipple, said second rotating means



comprising two jaw pieces, said two jaw pieces being associated for relative movement, each of said two jaw pieces having a clamping surface shaped to engage said outer surface of said nipple, said second rotating means being configured to cause the clamping surface of a preselected one of said two jaw pieces to move toward the clamping surface of the other one of said two jaw pieces in response to rotation of said second rotating means, said second rotating means being rotatable in two directions of rotation; and

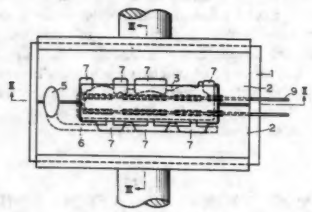
means for actuating said second rotating means upon a signal from said indicating means that represents a deviation of said rim from said predetermined perpendicular plane in excess of a predetermined magnitude.

4,585,047

APPARATUS FOR COOLING MOLTEN METAL IN A MOLD

Hiroshi Kawai, and Yukio Ootsuka, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 1, 1984, Ser. No. 575,798
Int. Cl.[4] B22D *27/04*
U.S. Cl. 164—126 **13 Claims**



1. An apparatus for cooling molten metal for solidification into a cast product, said apparatus comprising:

a base member having a plurality of holes therethrough and located in said base in a predetermined arrangement, each of said plurality of holes in said base having a first diameter portion with a first diameter and a second diameter portion with a second diameter less than said first diameter;

a first mold mounted on the base member and having a plurality of apertures extending therethrough, said plurality of apertures corresponding in number and position to said plurality of holes in said base;

a second mold mounted on said first mold and defining a mold cavity therebetween for receiving molten metal, said second mold having a plurality of openings extending therethrough, said plurality of openings corresponding in number and position to said plurality of holes in said base, each of said plurality of openings and apertures being aligned with a corresponding one of said plurality of holes to form a plurality of aligned passages; and

means for cooling molten metal in said mold cavity, said cooling means being a plurality of pipes extending through said molten metal in said mold cavity, each pipe having an outside diameter approximately equal to said first diameter of said holes, each pipe extending through a corresponding one of said plurality of aligned passages and through a first diameter portion of a corresponding hole, each pipe being supported in said base by said second diameter portion of said corresponding hole to position each of said pipes in said predetermined arrangement as said molten metal solidifies into said product;

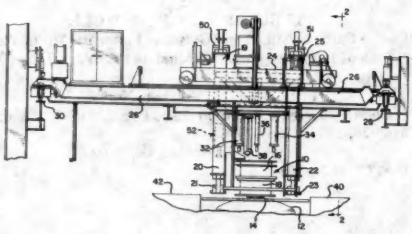
wherein the cast product includes an excess portion and a finished portion, and the plurality of pipes are located in said predetermined arrangement in the excess portion of the cast product, the excess portion being separated subsequently from the finished portion of the cast product.

4,585,048

MOLD TRANSFER ASSEMBLY

Lyman W. Jeffreys, Barrington, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 18, 1983, Ser. No. 514,968
Int. Cl.[4] B22D *5/00*
U.S. Cl. 164—323 **7 Claims**



1. A pouring assembly for use in the manufacture of cast metal articles,

said assembly comprising

a mold transfer apparatus including a top frame and two sets of depending legs extending therefrom and supported thereby,

a bridge structure,

said top frame mounted on said bridge structure so as to be able to move along said bridge structure,

a pouring tank containing a ladle, said pouring tank being capable of being pressurized to permit the upward pouring of molten metal from the ladle therein, said pouring tank being positioned at a pouring station under said bridge structure,

one set of said depending legs of said mold transfer apparatus adapted to move an empty mold from a pick up location to said pouring station, and the second set of depending legs of said mold transfer apparatus adapted to simultaneously move a filled mold from said pouring station to a set down location,

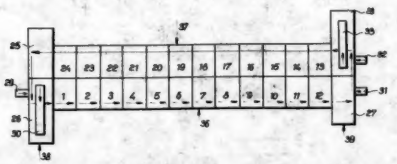
said bridge structure having fixed thereto a holding means to hold said mold at said pouring station to permit the empty mold to begin being filled shortly after being positioned at said pouring station.

4,585,049

METHOD OF AND APPARATUS FOR HANDLING PERMANENT MOLDS

Jaroslav Sitta, Zabreh; Karil Kopka, Mohelnice; Frantisek Petrik, Mohelnice, and Kvetoslav Vyjidacek, Mohelnice, all of Czechoslovakia, assignors to Mez Mohelnice narodni podnik, Mohelnice, Czechoslovakia

Continuation of Ser. No. 078,711, Sep. 25, 1979, abandoned, which is a continuation of Ser. No. 915,204, Jun. 13, 1978, abandoned. This application Oct. 20, 1982, Ser. No. 435,607
Claims priority, application Czechoslovakia, Jun. 22, 1977, 4113-77
Int. Cl.[4] B22D *5/04*
U.S. Cl. 164—324 14 Claims



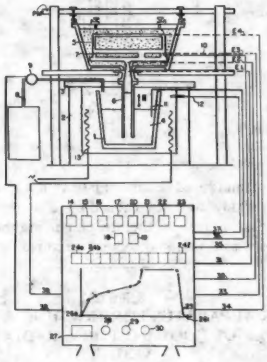
1. An arrangement for handling permanent molds, comprising a plurality of carriers of permanent molds, a closed track for said carriers, this track comprising a forward path and a return path, each of said paths having a plurality of sections including at least first and last sections, a first transfer station having a first positon and a second position, said first transfer station being adapted to transfer carriers between the return path and the forward path, the first position of the first transfer station being opposite the last section of the return path, and the second positon of the first transfer station being opposite the first section of the forward path, a second transfer station having a first position and a second position, said second transfer station being adapted for transfer of carriers between the forward path and the return path, the first position of the second transfer station being opposite the last section of the forward path, the second position of the second transfer station being opposite the first section of the return path, an intermittent first drive means for the step-by-step advance of carriers from the second position of the first transfer station to the first section and thence to the last section of the forward path, a continuous drive means for imparting to the carriers a continuous movement from the first section of the return path to its last section and to the first position of the first transfer station for the advance of a carrier from section-to-section of the forward path and from the last section of the forward path to the first position of the second transfer station, a second drive means for the transfer of a carrier from the first to the second position of the first transfer station, a third drive means for the transfer of a carrier from the first to the second position of the second transfer station, and a fourth drive means for the transfer of carrier from the second position of the second transfer station to the first section of the return path.

4,585,050

PROCESS FOR AUTOMATIC REGULATION OF A CASTING CYCLE

Pierre L. Merrien, Billere, and Pierre A. Merrien, Sceaux, both of France, assignors to Etude et Developpement en Metallurgie, E.D.E.M., S.A.R.L., Billere, France

Continuation of Ser. No. 222,557, Jan. 5, 1981, abandoned. This application Jun. 21, 1985, Ser. No. 746,947
Int. Cl.[4] B22D *17/32*
U.S. Cl. 164—457 11 Claims



1. A process for controlling a casting cycle of a metal casting system based on the geometry of the casting comprising:

(a) a calibration procedure for determining the optimum pressure in a furnace of the casting system as a function of time to optimize the casting of an article of a particular design; and

(b) a casting procedure comprising the step of:

(i) introducing melted metal substance into a furnace;

(ii) introducing a discharge fluid under pressure into said furnace to pressurize the metal substance;

(iii) sensing the presence of the metal substance at a location relating to the entry of the metal substance into a mold of the system to determine an initial time;

(iv) continuously sensing the real value of the pressure of the discharge fluid and comparing it to the optimum pressure of the discharge fluid as a function of time based upon said initial time;

(v) continuously adjusting the pressure in said furnace to conform to said optimum pressure.

4,585,051

HEAT EXCHANGE BETWEEN SOLIDS

Leung S. Leung, Graceville, and Yat O. Chong, St. Lucia, both of Australia, assignors to University of Queensland, Australia

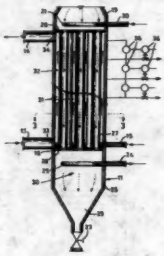
PCT No. PCT/AU83/00180, § 371 Date Jan. 8, 1985, § 102(e) Date Jan. 8, 1985, PCT Pub. No. WO84/04584, PCT Pub. Date Nov. 22, 1984
PCT Filed Dec. 6, 1983, Ser. No. 692,891
Claims priority, application Australia, May 13, 1983, PF9339
Int. Cl.[4] F28D *13/00*
U.S. Cl. 165—1 11 Claims

1. A method for exchanging heat between gas-solids mixtures, comprising the steps of:

(a) passing a first heated gas-solids mixture from which heat is to be extracted through a heat exchanger in a substantially continuous flow in a first flow path;

(b) passing a second gas-solids mixture to be heated by said first mixture through said heat exchanger in a substantially continuous flow in a second flow path physically separated from but in heat exchange relation with said first flow path, and

(c) maintaining a constant gas velocity in said second flow path to compensate for expansion of the heated gas in said second gas-solids mixture and to prevent mixing or circulation of the solids in said second mixture, and



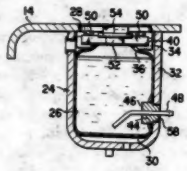
(d) maintaining said second mixture in a moving-bed mode approaching but not exceeding a state of incipient or minimal fluidization, thereby enhancing the heat exchange between said first and second mixtures.

4,585,052

TANK APPARATUS FOR HOLDING A RESERVE SUPPLY OF COOLANT FOR A RADIATOR ON A VEHICLE

Tetsuo Kaneko, Hirakata, and Nobuo Fujita, Uji, both of Japan, assignors to Kabushiki Kaisha Komatsu Sesiakusho, Japan

Filed Sep. 14, 1984, Ser. No. 650,914
Claims priority, application Japan, Sep. 14, 1983, 58-141597
Int. Cl.[4] F28F 9/00; B65D 25/14, 25/20
U.S. Cl. 165—41 **4 Claims**



1. A tank apparatus for holding a reserve supply of coolant for a radiator on a vehicle, comprising:

(a) a radiator guard having sides and a connecting wall together surrounding an interior space, said guard having an aperture defined therethrough;

(b) a pair of mounting means, each mounting means being secured to each side of the radiator guard in said interior space;

(c) rigid enclosure means disposed internally of the radiator guard and fitting between said pair of mounting means so as to be firmly attached thereto, the enclosure means defining a tank receiving space of prescribed shape open to the aperture in the radiator guard;

(d) a tank of elastic material having an approximate shape of the tank receiving space within the enclosure means and relatively closely received in the tank receiving space so as to be supported by the enclosure means, the tank having a mouth defined therein in register with the aperture in the connecting wall of said radiator guard and an outlet opening formed therein;

(e) a rigid closure member closing the mouth in the tank and firmly attached thereto, the closure member being detachably secured to the enclosure means so as to be exposed through the aperture in the radiator guard;

(f) a second closure member of rigid material semi-permanently closing the outlet opening in the tank, and

(g) an outlet pipe extending through the second closure member and the enclosure means for the delivery of coolant from the tank to the radiator,

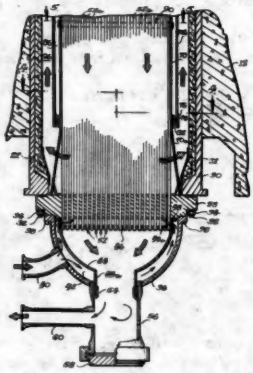
whereby the tank is free from cracking and is readily withdrawable together with the closure member from the tank receiving space.

4,585,053

HEAT EXCHANGER FOR REACTOR CORE AND THE LIKE

Jay S. Kaufman, and John A. Kissinger, both of Del Mar, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 2, 1982, Ser. No. 414,440
Int. Cl.[4] F28D 7/12; F28F 9/22
U.S. Cl. 165—74 **3 Claims**

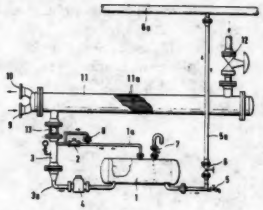


1. A heat exchange arrangement for transferring heat from a reactor gas coolant to a secondary fluid medium comprising, in combination, vessel means defining a generally cylindrical cavity having a substantially vertical longitudinal axes, means defining an inlet passage intersecting said cavity adjacent the upper end thereof and enabling introduction of a high temperature reactor coolant into the upper end of said cavity, an exit passage intersecting said cavity at an elevation below said inlet passage, and a heat exchanger supported by said vessel means within said cavity, said heat exchanger including a primary tube sheet generally adjacent the lower end of said cavity, a plurality of heat transfer tubes supported by said primary tube sheet so as to extend upwardly within said cavity, said heat transfer tubes being adapted to receive a secondary fluid medium upwardly therein, a first shroud disposed circumferentially of said heat transfer tubes and having at least one flow passage formed therein adjacent said primary tube sheet, said first shroud extending upwardly from said primary tube sheet to at least the height of said heat transfer tubes and having a substantially closed wall upper portion and an outwardly flared lower portion, said lower portion having said at least one flow passage formed therethrough, and a secondary shroud substantially coaxial with said first shroud and extending upwardly within said cavity adjacent said inlet passage, said second shroud being isolated within said cavity and cooperative with said first shroud such that primary coolant entering said cavity flows downwardly within said coaxial shrouds and past said heat transfer tubes before exiting through said at least one flow passage.

4,585,054
CONDENSATE DRAINING SYSTEM FOR TEMPERATURE REGULATED STEAM OPERATED HEAT EXCHANGERS

Ernst Köprunner, Bogendorf 13, A-5145 Neukirchen, Austria

Filed May 14, 1984, Ser. No. 609,669
Int. Cl.[4] F28B 1/00, 9/10
U.S. Cl. 165—112 4 Claims

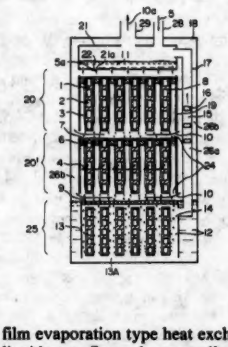


1. A condensate draining system for a temperature regulated, steam operated heat exchanger having a steam compartment, a steam inlet and a steam condensate outlet, said draining system comprising: a buffer tank; a first condensate drainage pipe extending from the heat exchanger to the buffer tank; a condensate outlet positioned in the condensate drainage pipe; air venting means connected to the condensate outlet of the heat exchanger, the air venting means including a gas control pipe extending from an upper part of the buffer tank to the heat exchanger steam condensate outlet to permit introducing directly into the steam compartment of the heat exchanger a non-condensing gas having a higher specific gravity than that of steam within the heat exchanger and a higher pressure than atmospheric pressure, and a non-return valve positioned in the gas control pipe; a condensate collection pipe positioned above the buffer tank; and a second condensate drain pipe extending from the condensate collection pipe to a lower part of the buffer tank.

4,585,055
LIQUID FILM EVAPORATION TYPE HEAT EXCHANGER

Wataru Nakayama, Kashiwa; Takahiro Daikoku, Ibaraki; Tadskatsu Nakajima, Ibaraki; Heikichi Kuwahara, Ibaraki, and Akira Yasukawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1983, Ser. No. 552,417
Claims priority, application Japan, Nov. 19, 1982, 57-201940
Int. Cl.[4] F28D 5/02; F28F 25/00
U.S. Cl. 165—115 3 Claims



1. A liquid film evaporation type heat exchanger in which a medium in a liquid state flows downwardly in the form of a film along heat transfer surfaces, the heat exchanger comprising:

at least two heat transfer units arranged within a housing at locations spaced apart from each other in a direction in which the medium in the liquid state flows, each of said heat transfer units including a plurality of flat heat transfer ducts each formed with a plurality of warm water passageways extending substantially perpendicular to the direction of flow of the medium in the liquid state, and a plurality of liquid distributing beams which block a medium in a gaseous state, each of said beams is formed with a plurality of cutouts through which said medium in the liquid state flows downwardly, said flat heat transfer ducts and said liquid distributing beams being alternately arranged in the respective units;

guide plate means disposed inside said housing and surrounding lateral sides of said heat transfer units to define a vapor passageway between said guide plate means and said housing;

a liquid medium sump located above an uppermost heat transfer unit for supplying the medium in the liquid state into said heat transfer units;

a chamber provided in said housing below said heat transfer units and filled with the medium in the liquid state;

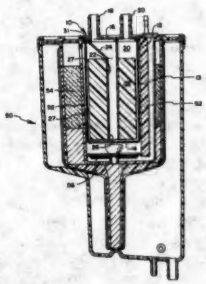
another heat transfer unit disposed in said chamber and including a plurality of flat heat transfer ducts each formed with a plurality of warm water passageways extending substantially in the same direction as the warm water passageways formed in the heat transfer ducts of said at least two heat transfer units; and

port means positioned between the at least two heat transfer units and communicating a space inside said guide plate means with said vapor passageway for releasing the medium in the gaseous state within said space into said vapor passageway.

4,585,056
HEAT EXCHANGER

Rolf A. Oscarsson, Hudson, Ohio, assignor to Norton Company, Worcester, Mass.

Filed Apr. 18, 1984, Ser. No. 601,705
Int. Cl.[4] F28F 21/06
U.S. Cl. 165—133 8 Claims



1. A heat exchanger for use in controlling temperature of blood in an extracorporeal blood circuit comprising:

an enclosed cylindrical heat exchange core having a top portion and relatively straight non-convoluted outer cylindrical and bottom walls with a smooth outer heat exchange surface coated with a polymer of tetrafluoroethylene, of relatively small blood compatible surface area and low resistance to blood flow and a plug positioned within said core such that there is a relatively small space between the plug and said outer cylindrical and bottom walls;

means for circulating a relatively small volume of heat exchange medium through the relatively small space and in contact with the bottom wall, then upwardly against the outer cylindrical wall and out of said core;

a receiver including an inner wall forming a compartment of specific volume about and into which the core can be nested so that the coated outer smooth heat exchange surface of the core is narrowly spaced at a predetermined small distance of from 0.040 inches (1.02 mm) to 0.120 inches (3.05 mm) from the inner wall of the receiver and the core fills a majority of the specific volume of the compartment; and

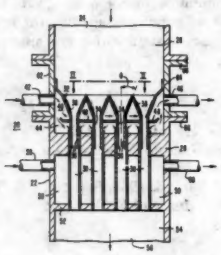
means for directing blood into and upwardly through an unobstructed narrow space between the coated outer smooth heat exchange surface of the core and the inner walls of the receiver whereby the blood flows unobstructed in a narrow stream over a compatible, smooth, low resistance, easily cleaned and sterilized non-toxic highly efficient relatively small heat exchange surface area of the core requiring much less blood to prime and a small volume of heat exchange medium flow.

4,585,057

COOLED TUBESHEET INLET FOR ABRASIVE FLUID HEAT EXCHANGER

David C. Marburger, Monroeville, Pa., assignor to KRW Energy Systems Inc., Madison, Pa.

Filed Sep. 30, 1982, Ser. No. 432,034
Int. Cl.[4] F28F *19/00, 9/04, 9/22*
U.S. Cl. 165—134.1 **1 Claim**



1. An abrasion resistant vertical shell and tube heat exhanger for cooling hot abrasive gases on the tube side which comprises:

a cylindrical shell;

an upper tubesheet joined to said cylindrical shell;

a plurality of circular tubes joined to and terminating at said upper tubesheet;

a cylindrical spool piece having a diameter substantially the same as that of said cylindrical shell, a cooling fluid inlet and a cooling fluid outlet, said spool piece being removably joined to said shell proximate said upper tubesheet;

a corresponding plurality of circular tubular extensions disposed at least partially within said spool piece having lower ends slidably disposed within said tubes proximate said upper tubesheet, said extensions circularly flared at the upper ends at an angle between 20 and 40 degrees with respect to the axis of said circular tubular extensions, each of the upper circularly flared ends being joined directly to adjacent circularly upper flared ends at the top extremities thereof and the circularly upper flared ends adjacent to the spool piece being joined to the spool piece above said cooling fluid inlet and outlet, said tubular extensions being made of a abrasion-resistant material selected from metal, refractory ceramic and steel coated with an erosion-resistant facing; and

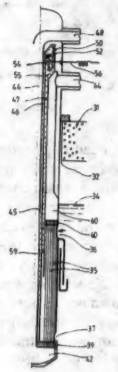
a cooling fluid passageway defined by the inner surface of said spool piece, the outer surfaces of said plurality of tube extensions and the upper surface of said upper tubesheet.

4,585,058

HEAT EXCHANGER HAVING A BUNDLE OF STRAIGHT TUBES

Jean-Louis Pierrey, Bourg la Reine, France, assignor to Novatome, Le Plessis Robinson, France

Filed Oct. 13, 1983, Ser. No. 541,746
Claims priority, application France, Nov. 5, 1982, 82 18571
Int. Cl.[4] F28F *13/00*
U.S. Cl. 165—135 **3 Claims**



1. In a heat exchanger for high temperature fluids comprising a bundle of straight vertical tubes consisting of an annular lower tube plate (39), an annular upper tube plate (40), a plurality of tubes fixed between said plates and a central cylindrical inner wall coaxial with said plates serving as an entry duct (44) under said lower tube plate (39) for a first fluid which circulates upwards in the tubes of said bundle and leaves said exchanger in its upper part through an annular exit duct (60) coaxial with said entry duct (44), a second fluid circulating in contact with the outer surface of the tubes of said bundle (35), for exchanging heat with said first fluid, said inner wall serving as said entry duct (44) for said first fluid comprising

(a) a first cylindrical shell (45) with a vertical axis welded in its lower part to said lower tube plate (39) along its inner edge and joined in its upper part to a supply duct for said first fluid (48);

(b) a second shell (46) coaxial with said first shell, fixed to said lower tube plate arranged outside said first shell (45) and extended upwards clearly above said upper tube plate (40);

(c) a third shell (47) coaxial with said first and second shells fixed to said upper tube plate (40) along its inner wall, arranged outside said second shell (46), extended downwards as far as a level situated between said lower and upper tube plates (39, 40) and upwards substantially to the level of an upper part of said second shell (46), said third shell (47) being joined to the upper part of said first and second shells (45, 46) along its upper edge, with means forming a leak-proof annular chamber (54) between said first and second shells (45, 46) which is filled with gas and that a chamber (55) opening with its lower part into said second fluid circulating in contact with said bundle (35) is bounded by said second and third shells (46, 47), said last mentioned annular chamber (55) being connected to a source of inert gas.

4,585,059

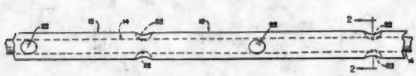
HEAT TRANSFER TUBE ASSEMBLY

Marlow Lee, Clawson, Mich., assignor to H & H Tube & Mfg. Co., Southfield, Mich.

Continuation of Ser. No. 112,393, Jan. 15, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 419,723

Int. Cl.⁴ F28D *7/14*; F28F *1/00*

U.S. Cl. 165—154 **6 Claims**



1. A heat transfer tube comprising a first metallic tubular conduit member having a cylindrical wall, a second metallic tubular conduit member having a cylindrical wall concentrically disposed within said first metallic tubular conduit member, said second tubular member comprising a pair of tubular conduits disposed one within the other, the exteriorly disposed tubular conduit being shrunk onto the interiorly disposed conduit such as to provide said second tubular member with a double wall thickness and the cylindrical wall of said first tubular conduit member having an inner surface of a diameter greater than the outer surface of the cylindrical wall of said second tubular conduit member such that a substantially annular conduit is formed between the outer surface of said second tubular conduit member and the inner surface of said first tubular conduit member, a plurality of substantially dome-shaped concave first dimples formed in the wall of said first tubular conduit member and having each a convex top portion projecting radially and inwardly into the wall of said second tubular conduit member, a plurality of corresponding substantially dome-shaped concave second dimples formed in the wall of said second tubular conduit member and projecting radially and inwardly in said second tubular conduit, said radially and inwardly projecting convex top portion of each of said substantially dome-shaped first dimples being firmly engaged in one of said dome-shaped concave second dimples in the wall of said second tubular conduit member, thereby forming a sturdy and rigid assembly of said first and second tubular conduit members by said dome-shaped complementary concavely recessed dimples in the wall of said first tubular conduit member and in the wall of said second tubular conduit member for securely locking and holding said second tubular conduit member within said first tubular conduit member by forced engagement of the top convex portion of each first dimple in the wall of said first tubular conduit member into a corresponding concavely recessed second dimple in the wall of said second tubular conduit member.

4,585,060

FLUID SAMPLING APPARATUS

Frederick E. Bernardin, Ann Arbor; William D. Dickinson, Ypsilanti, and David Mioduszewski, Ann Arbor, all of Mich., assignors to Q.E.D. Environmental Systems, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 470,305, Feb. 28, 1983, Pat. No. 4,489,779. This application Nov. 19, 1984, Ser. No. 672,495

The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.

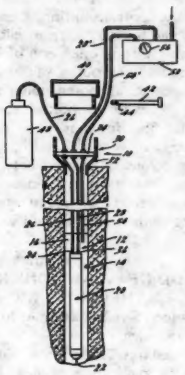
Int. Cl.⁴ E21B *49/08*

U.S. Cl. 166—64 **4 Claims**

1. A groundwater sampling apparatus for withdrawing groundwater samples from a groundwater monitoring well, said apparatus having dedicatable inground components to prevent the apparatus from contaminating another well, said apparatus comprising:

a pump adapted to be submerged in the groundwater within said well for pumping a portion of said ground water therefrom, said pump being permanently dedicatable to said well and having a groundwater chamber with an inlet and an outlet, said groundwater chamber being in communication with said groundwater in said well through said inlet when said pump is submerged therein;

a wellhead assembly permanently dedicatable to said well



and adapted to be secured to said well to isolate the interior of said well from the above-ground surroundings, said wellhead assembly further including conduit means communicable with said pump and said wellhead assembly.

4,585,061

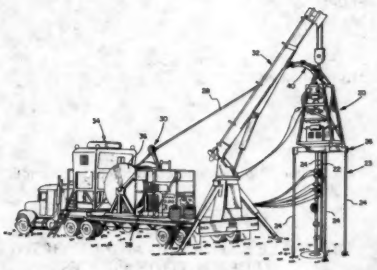
APPARATUS FOR INSERTING AND WITHDRAWING COILED TUBING WITH RESPECT TO A WELL

Robert A. Lyons, Jr., Carrollton, and Johnnie B. Maschek, Jr., Fort Worth, both of Tex., assignors to Hydra-Rig Incorporated, Fort Worth, Tex.

Filed Oct. 18, 1983, Ser. No. 543,091

Int. Cl.⁴ E21B *19/00*

U.S. Cl. 166—77 **30 Claims**



1. Apparatus for injecting and withdrawing means forming a substantially continuous length of tubing into and from a well, respectively, said apparatus including:

a frame;

a pair of opposed endless flexible conveyor members supported on said frame and having opposed elongated parallel runs spaced apart to form a path for engagement of said tubing by gripper means on said conveyor nembers, said conveyor members being trained over spaced apart drive sprocket means and idler sprocket means associated with respective ones of said conveyor members;

said frame including a base member, a pair of spaced apart upstanding plate members supported on and secured to said base member and supporting therebetween said conveyor members and at least one of said sprocket means for

each of said conveyor members, and spaced apart generally vertically extending column members supported on and secured to said base member, said column members being disposed along opposite vertical sides of each of said plate members and connected to said plate members, respectively, for transmitting at least a portion of reaction pulldown and hoist loads from said plate members to said base member during operation of said apparatus to move said tubing into and out of said well;

a sub-base member disposed under said base member and including means for supporting said base member on said sub-base member for movement relative to said sub-base member, and

load sensing means interposed between said base member and said sub-base member for measuring reaction loads on said frame due to at least one of injecting and withdrawing said tubing with respect to said well.

4,585,062

METHOD OF USING RODS RESISTANT TO HYDROSULFURIC ACID

Jan Tiberg, Hofors, Sweden, assignor to SKF Steel Engineering AB, Hofors, Sweden

Filed Jul. 7, 1983, Ser. No. 511,660

Claims priority, application Sweden, Aug. 18, 1982, 8204740

The portion of the term of this patent subsequent to Feb. 18, 2003, has been disclaimed.

Int. Cl.⁴ E21B *41/02*

U.S. Cl. 166—244.1 **6 Claims**

1. A method of using a high-strength steel rod in an acid environment, comprising immersing and using said rod in an acid-environment in which the H_2S partial pressure in gaseous phase is at least 300 Pa or in which the H_2S content in liquid phase has a corresponding equilibrium pressure, said steel being carbon steel or low-alloyed steel in a cold-deformed condition wherein the degree of cold-deformation is at least 5% to increase resistance to sulfide stress cracking, and wherein said rod is used in said acid-environment in the cold deformed condition without subsequent toughening by austenitizing, said steel having a lower yield point of 550 MPa and consisting essentially of by weight:

C 0–1.20%
Si 0–1.0%
Mn 0–3.0%
Cr 0–2.0%
Ni 0–1.0%
Mo 0–1.0%
Cu 0–1.0%
V 0–0.3%
Nb 0–0.2%
Ca 0–0.05%

Fe together with incidental ingredients and impurities up to 100%.

4,585,063

OIL SHALE RETORTING AND RETORT WATER PURIFICATION PROCESS

Dean G. Venardos, Naperville, and Colin G. Grieves, Oswego, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 368,976, Apr. 16, 1982, Pat. No. 4,495,056. This application Sep. 27, 1984, Ser. No. 656,012

Int. Cl.⁴ C10B *57/20*; E21B *43/247, 43/26*; E21C *41/10*

U.S. Cl. 166—259 **17 Claims**

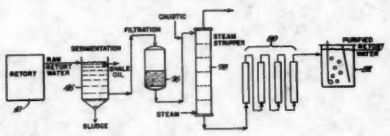
1. An in situ oil shale process, comprising the steps of:

retorting raw oil shale in situ to liberate light hydrocarbon gases, shale oil and shale-laden retort water containing suspended and dissolved impurities including raw and spent oil shale particulates, shale oil, organic carbon, carbonates, ammonia and chemical oxygen demand;

separating said light hydrocarbon gases and a substantial portion of said shale oil from said shale-laden retort water by sedimentation in an underground sump;

removing a substantial portion of the remaining shale oil and a substantial portion of said suspended raw and spent oil shale particulates from said shale-laden retort water by filtering said shale-laden retort water through a granular filter;

steam stripping a substantial amount of said ammonia and carbonates from said shale-laden retort water; and



carbon adsorbing and biologically treating said shale-laden retort water to remove a substantial amount of the total and dissolved organic carbon from said shale-laden retort water and simultaneously substantially lower the chemical oxygen demand of said shale-laden retort water so as to substantially purify said shale-laden retort water.

4,585,064

HIGH STRENGTH PARTICULATES

John W. Graham, Rte. 5 Box 289(210 Co. Rd. 147), Alvin, Tex. 77511, and A. Richard Sinclair, 2903 Virginia, Houston, Tex. 77098

Filed Jul. 2, 1984, Ser. No. 626,754

Int. Cl.⁴ E21B *43/267*

U.S. Cl. 166—280 **19 Claims**

1. A method of propping a fracture in a subterranean formation comprising:

placing in said fracture a quantity of free flowing, heat curable particles comprising:

a particulate substrate suitable for use as a proppant;

an inner coating of a substantially cured resin covering said substrate said coating increasing the crush resistance of said substrate, and

an outer coating of a fusible curable resin covering said inner coating; and

causing said outer coating to fuse and then cure creating a cohesive permeable mass.

4,585,065

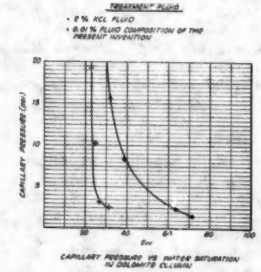
METHODS OF INCREASING HYDROCARBON PRODUCTION FROM SUBTERRANEAN FORMATIONS

Glenn S. Penny; Walter R. Dill, and Tommy R. Gardner, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 15, 1984, Ser. No. 671,545

Int. Cl.⁴ E21B *43/26*

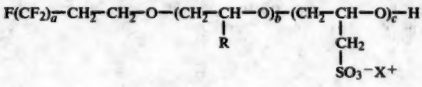
U.S. Cl. 166—308 **18 Claims**


"TREATMENT" FLUID
• 2 % KCL FLUID
• 0.01 % FLUID COMPOSITION OF THE PRESENT INVENTION
CAPILLARY PRESSURE (psi)
CAPILLARY PRESSURE VS. WATER SATURATION IN DOLOMITE CLOSURE

1. A method of increasing the production of hydrocarbons from a hydrocarbon-containing subterranean carbonate-containing formation comprising introducing into said subterra-

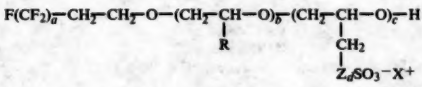
nean formation an anionic perfluoro substituted compound in a liquid carrier fluid whereby said compound is absorbed onto surfaces of said formation to reduce wetting of said surfaces by either hydrocarbons or water, said anionic perfluoro substituted compound being selected from individual compounds and mixtures thereof represented by the formulas:

Formula I



and

Formula II



wherein a is a whole number or fraction thereof in the range of from about 4 to about 18;

wherein b is a whole number of fraction thereof in the range of from about 0 to about 30;

wherein c is a whole number of fraction thereof in the range of from about 1 to about 3;

wherein d is independently a whole number of fraction thereof in the range of from about 0 to about 1 and the sum of average values of d are less than or equal to c;

R is independently selected from the group consisting of hydrogen and a methyl group whereby mixtures containing both groups may result; and

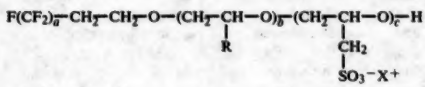
X^+ is an exchangeable cation; and

Z is a nucleophile containing radical species containing at least one member selected from the group consisting of oxygen and nitrogen wherein the nitrogen is in the form of NR^1 wherein R^1 is independently selected from the group consisting of hydrogen and methyl radicals.

7. In a method of fracturing a subterranean hydrocarbon-containing formation containing carbonates to stimulate the production of hydrocarbons therefrom wherein a fracturing fluid is introduced into said formation in a manner whereby fractures are created therein, the improvement comprising:

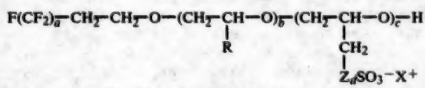
combining with said fracturing fluid an anionic perfluoro substituted compound having the property of absorbing on surfaces of said formation whereby wetting of said surfaces by either hydrocarbons or water is reduced, said anionic compound being selected from individual compounds and mixtures thereof represented by the formulas:

Formula I



and

Formula II



wherein a is a whole number or fraction thereof in the range of from about 4 to about 18;

wherein b is a whole number or fraction thereof in the range of from about 0 to about 30;

wherein c is a whole number or fraction thereof in the range of from about 1 to about 3;

wherein d is independently a whole number of fraction thereof in the range of from about 0 to about 1 and the sum of the average values of d are less than or equal to c;

R is independently selected from the group consisting of hydrogen and a methyl group whereby mixtures containing both groups may result; and

X^+ is an exchangeable cation; and

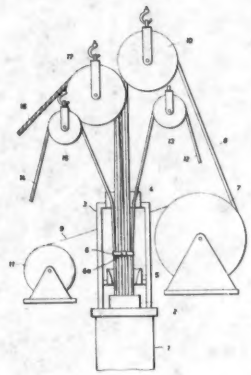
Z is a nucleophile containing radical species containing at least one member selected from the group consisting of oxygen and nitrogen wherein the nitrogen is in the form of NR^1H wherein R^1 is independently selected from the group consisting of hydrogen and methyl radicals.

4,585,066

WELL TREATING PROCESS FOR INSTALLING A CABLE BUNDLE CONTAINING STRANDS OF CHANGING DIAMETER

Boyd B. Moore; Peter Vanmeurs, and Cor F. Van Egmond, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1984, Ser. No. 676,743
Int. Cl.[4] E21B *19/22*
U.S. Cl. 166—385 **3 Claims**



1. In a well treating process in which a bundle of strands which includes at least one weight-supporting strand and at least two strands having differing thicknesses along different portions of their length are inserted into a well, an improvement for minimizing the number of spooling means needed for equalizing the length of strands inserted, comprising:

supporting the strands of differing thicknesses on a single drum having flanges spaced close to, but slightly greater than, the width of a layer of those strands with their thickest portions side-by-side;

spooling a flexible band which is (a) capable of extending substantially between the drum flanges and (b) bridging across the upper portions of a side-by-side layer of strands of differing thicknesses to form a substantially flat surface for receiving an additional layer of the strands;

unspooling the strands of differing thicknesses into the well while respooling a flexible band onto a separate spooling means;

moving said weight-supporting strand and other strands of said bundle into the well along with the strands of differing thickness; and

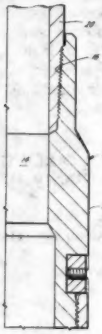
banding the strands being moved into the well into contact with each other so that the frictional contact with the weight-supporting strand is sufficient to support the weight of the strands between the bands.

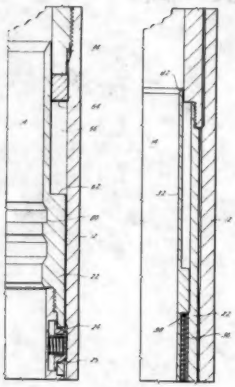
4,585,067

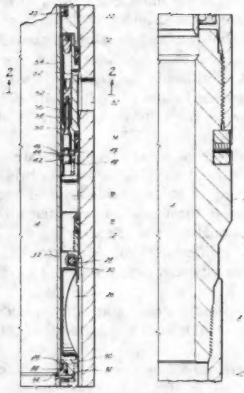
METHOD AND APPARATUS FOR STOPPING WELL PRODUCTION

William A. Blizzard, Houston; James K. Garner, Jr., Pearland, and John D. Anderson, Humble, all of Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Aug. 29, 1984, Ser. No. 645,575
Int. Cl.[4] E21B *34/08*
U.S. Cl. 166—386 **13 Claims**







10. The method of killing production of an oil and/or gas well through a well conduit comprising,

inserting a safety valve in the well conduit in the open position,

actuating the safety valve to the closed position by an increase of the pressure outside of the conduit relative the pressure on the inside of the conduit,

after the valve is closed establishing communication of fluid from the outside of the conduit to the inside of the conduit above the safety valve by pressure in the conduit below the closed safety valve and

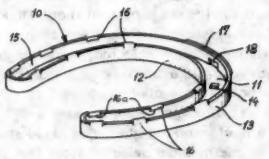
injecting fluid from the outside of the conduit through the communication path and through the safety valve to kill production through the conduit.

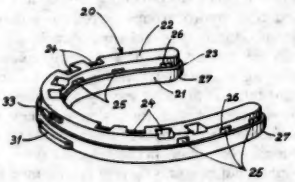
4,585,068

HORSESHOE

Anders Jungersen, Fagerhojvaenge 3, DK-2950 Vedbaek, Denmark

PCT No. PCT/DK83/00053, § 371 Date Jan. 18, 1984, § 102(e) Date Jan. 18, 1984, PCT Pub. No. WO83/03949, PCT Pub. Date Nov. 24, 1983
PCT Filed May 18, 1983, Ser. No. 579,907
Claims priority, application Denmark, May 19, 1982, 2263/82
Int. Cl.[4] A01L *5/00, 7/02*
U.S. Cl. 168—11 **19 Claims**





1. In a horseshoe having a fixed, channel-shaped upper part with a bottom wall intended for engagement with a horse's hoof and a front and rear side wall and an exchangeable lower part of an elastic material, said lower part having a ridge member having side walls and a top side intended for insertion into the channel of the upper part and an exposed underside, the upper part being firmly connected to the ridge member of the lower part by cooperating projections and recesses, the improvement wherein the projections are provided on the upper part and have a top side that inclines inwardly and downwardly from the edges of the side walls toward the bottom wall of the channel of the upper part and that terminate in a flat end face extending substantially perpendicular to the side wall and spaced from the bottom wall of the channel, said projections engaging with an opposing face of a cooperating recess formed in the side walls of the ridge member of the lower part, said projections snapping into the recesses upon impression of the ridge member of the lower part into the channel of the upper part to thereby lock the parts together, and an insert of a hard, strong material embedded in the toe portion of the

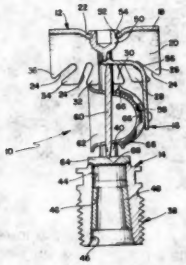
lower part, said insert having a locking member which engages with a cooperating locking member in the upper part, in which engaging position the two locking members are fixed by said snapping of said projections into said recesses.

4,585,069

LIQUID DISCHARGE NOZZLE

George N. Whitaker, East Providence, R.I., assignor to Grinnell Fire Protection Systems Company, Inc., Cranston, R.I.

Filed Oct. 18, 1984, Ser. No. 662,447
Int. Cl.[4] A62C *37/08;* B05B *1/26*
U.S. Cl. 169—37 12 Claims



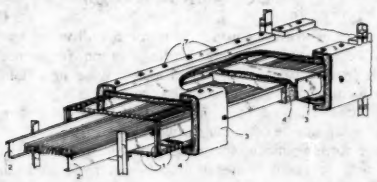
1. A liquid discharge nozzle comprising a deflector of generally arch-shaped cross-sectional configuration which is substantially open at opposite ends thereof, said deflector comprising an elongated central portion which extends between said opposite ends and a pair of side portions which extend between said opposite ends and diverge from opposite sides of said central portion to define the side extremities of said deflector, said deflector having a plurality of tines along the side extremities of said side portions but not having tines along the end extremities of said central portion which significantly affect the spray pattern of liquid discharged from said nozzle; and means for mounting said deflector adjacent a liquid discharge outlet so that when liquid is discharged from said outlet, at least a portion of it impinges on the inner surface of said central portion and is deflected outwardly along the inner surfaces of said side portions.

4,585,070

ROPE SOCKET TRAYS PROTECTION AGAINST INTERNAL AND OUTER FIRES

Lorenzo G. Garrido, Ramón y Cajal, 32, Castellón de la Plana, Spain

Continuation of Ser. No. 380,004, May 19, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 651,637
Claims priority, application Spain, Jul. 9, 1981, 503814
Int. Cl.[4] H02G *3/04;* A62C *3/00*
U.S. Cl. 169—48 8 Claims



1. A fire protection system for electrical cable trays comprising:

a rigid frame member having an interior substantially larger than the exterior of a cable tray;

means for coupling said rigid frame member to said cable tray wherein said rigid frame member surrounds said cable tray and wherein said interior of said rigid frame member is suspended apart from said exterior of said cable tray;

a plurality of flexible mattresses mounted to said rigid frame member, each of said plurality of flexible mattresses being formed of an inner casing of a fiberglass material and an outer cover made of a flame resistant textile material having a fusion point higher than one thousand degrees centigrade; and

means for releasably connecting each of said mattresses to said rigid frame member so that any mattress can be removed from the rigid frame member and replaced with a new one and the rigid frame member can be closed with said mattresses or released from the latter without disturbing cables in said cable tray.

4,585,071

METHOD AND APPARATUS GUIDING RETRACTABLE MACHINERY

Jack F. Anderson, Marion, N. Dak. 58466, and Clayton Melrose, Oakes, N. Dak., assignors to Jack F. Anderson, Marion, N. Dak.

Continuation-in-part of Ser. No. 240,137, Mar. 2, 1981, Pat. No. 4,491,183. This application Mar. 3, 1982, Ser. No. 355,100
Int. Cl.[4] A01B *79/00, 69/06, 65/02*
U.S. Cl. 172—1 19 Claims

14. The method of guiding machinery in relation to an immoveable object, comprising the steps of:

connecting reversible hydraulic motion producing means to said machinery in such a manner that said reversible motion producing means is capable of selectively moving said machinery toward and away from said object;

mounting first object sensing means and second object sensing means on said machinery in spaced apart relation to each other for sensing an object in proximity to said machinery;

connecting said first and second object sensing means to said reversible hydraulic motion producing means in such a manner that said first object sensing means causes said reversible hydraulic motion producing means to move said machinery away from said object when it senses the presence of an object in proximity to said machinery and said second object sensing means prohibits said reversible hydraulic motion producing means from moving said machinery closer to said object when it senses the presence of the object in proximity to the machinery;

using electric solenoid valve means for directing hydraulic fluid to said motion producing means in selective forward and reverse directions and for stopping flow of hydraulic fluid to said motion producing means;

directing electric power to actuate said solenoid valve means to move said motion producing means in one direction when neither said first object sensing means nor said second object sensing means senses an object in proximity to said machinery;

directing electric power to actuate said solenoid valve means to move said motion producing means in the opposite direction when said first object sensing means senses an object in proximity to said machinery; and

prohibiting electric power to said solenoid valve means to

move said motion producing means in said one direction when said second object sensing means senses an object in the proximity of said machinery.

17. Guidance apparatus for machinery, comprising:

reversible motion producing means for moving the machinery in one direction and in the opposite direction;

control means for activating said reversible motion producing means, said control means being adapted to activate said motion producing means to move the machinery in said one direction upon input of said first signal and to actuate said motion producing means to move the machinery in the opposite direction upon input of a second signal; and

first sensor means for sensing objects in a first predetermined proximity to the machinery and producing signals to said control means, said first sensor means being adapted to produce said first signal when there is no object within said first predetermined proximity and to produce said second signal when there is an object within said first predetermined proximity; and

second sensor means positioned a distance spaced apart from said first sensor means for sensing objects in a second predetermined proximity to the machinery and for preventing movement of said machinery in said opposite direction when the object is in said second predetermined proximity, said second sensor means being adapted to break and prevent said second signal from being received by said control means.

4,585,072

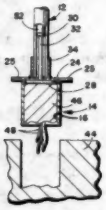
GARDENING TOOL WITH PLUG EJECTOR AND DETACHABLE CUTTING CHAMBER

Alfred J. Martinez, 11602 Chesterton St., Norwalk, Calif. 90650

Filed Jan. 13, 1984, Ser. No. 570,604

Int. Cl.[4] A01B *45/00, 45/02;* **A01C** *11/00;* **A01D** *9/06*

U.S. Cl. 172—22 **7 Claims**



7. A gardening tool comprising an elongated rod serving as a handle and terminating at its lower extremity in a broadened foot of cross section greater than the cross section of said rod, wherein the upper surface of said broadened foot is of frustoconical configuration, a tubular sleeve of greater cross section than said foot disposed about said rod for longitudinal reciprocal movement relative thereto, an annular guide disposed between said sleeve and said handle, a first end attachment adapted for removable securement to said lower extremity of said sleeve and having a transverse roof with a central, axial aperture therein and longitudinal encompassing walls depending from said roof defining an interior chamber having a uniform cross sectional area perpendicular to the alignment of said sleeve, a plunger including a transverse piston disposed within said chamber to extend across said uniform cross sectional area, an axial stem extending upwardly from said piston and through said central axial aperture in said roof, and a flat cap at the top of said stem larger than said axial aperture in said roof and located externally of said chamber and within the confines of said sleeve when said first end attachment is secured to said sleeve, and an alternative end attachment adapted for removable securement to said lower extremity of said sleeve and comprising a tubular extension of said sleeve having the same cross sectional dimensions as said sleeve.

4,585,073

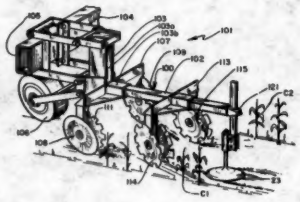
ROTARY DISK TOOL ASSEMBLY AND IMPLEMENTS

Bruce H. Mayeda, Longmont, and Robert R. Owen, Evergreen, both of Colo., assignors to The Eversman Mfg. Company, Denver, Colo.

Filed Aug. 24, 1984, Ser. No. 643,879

Int. Cl.[4] A01B *21/06, 23/00*

U.S. Cl. 172—158 **14 Claims**



1. A tool assembly for agricultural purposes comprising:

a rotary disk having a peripheral cutting edge mounting to an end of a substantially vertical rotary spindle; and

mounting means for said spindle including an elongated shank and a sleeve connected to and offset from said shank, said shank having a length of substantially uniform cross section so as to be capable of being slidably received in an upright slot of a clamp on a support movable along the ground, set at a selected elevation by a locking means, and readily removed from and replaced on the clamp, said sleeve rotatably supporting said spindle, said connection between said shank and sleeve including pivot means at a lower end portion of said shank, an offset portion between said shank and sleeve with said pivot means pivotally connecting said offset portion to said shank at a first connection to offset the axis of said spindle from the axis of said shank to enable said sleeve to pivot about said pivot means in relation to aid shank about a substantially horizontal axis and sleeve locking means connecting said offset portion and said shank at a second connection displaced from said pivot means, said sleeve locking means being releasable to enable said offset portion and sleeve to be pivoted about said pivot means whereby to set said sleeve at a fixed position relative to said shank and to selectively position said spindle upright and said cutting edge in a horizontal plane or at an angle to a horizontal plane as they are moved along the ground.

4,585,074

RIDGE FORMING APPARATUS

Mathew W. Fleischer, and John C. David, both of Columbus, Nebr., assignors to Fleischer Mfg., Inc., Columbus, Nebr.

Filed Oct. 15, 1984, Ser. No. 661,293

Int. Cl.[4] A01B *39/14, 39/20*

U.S. Cl. 172—194 **5 Claims**

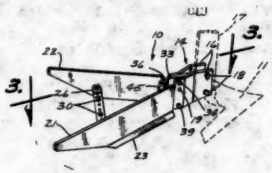
1. A ridge forming attachment for a cultivator having a plurality of earth working blades thereon for eliminating weeds from between rows of crops growing in a field, said ridge forming attachment comprising:

a bracket adapted to be attached to such cultivator rearwardly of one of the earth working blades;

ridge forming means for moving soil loosened by said one earth working blade from between rows to each side thereof thereby causing ridges to be formed along the rows of growing crops, said ridge forming means being narrower at the front thereof and progressively diverging outwardly toward the rear thereof for pushing the soil

from the center space between rows outwardly toward the rows of growing crops;

connection means for operatively pivotally attaching said ridge forming means to said bracket along a substantially vertical axis whereby said ridge forming means will precisely track behind said earth working blade and for permitting said ridge forming means to be temporarily deflected to one side or the other in the event that rocks or other potentially damaging obstacles are encountered;



pivot means for selectively permitting said ridge forming means to be pivoted to an inoperative position, said pivot means being operatively connected to said bracket and to said connection means for selectively pivoting said ridge forming means about a substantially horizontal axis between a lowered operative position and a raised inoperative position;

means for locking said ridge forming means into said operative position; and

means for operatively locking said ridge forming means into said raised inoperative position.

4,585,075

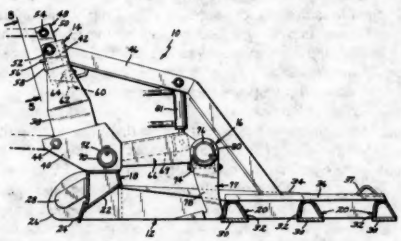
SOIL LEVELING APPARATUS WITH IMPROVED FRAME AND HITCH

Orlan H. Mork, 6029 - 225th St. W., Farmington, Minn. 55024

Continuation-in-part of Ser. No. 224,458, Jan. 12, 1981, Pat. No. 4,448,258. This application Jan. 13, 1984, Ser. No. 570,347

Int. Cl.⁴ A01B *49/02, 59/043*

U.S. Cl. 172—197 **8 Claims**



2. An apparatus for leveling soil and the like, comprising:

a generally rectangular frame including a transverse, elongate scraper member and a plurality of trailing transverse elongate ground engaging members fixedly secured in mutually spaced apart relationship between a pair of longitudinal side members;

the scraper member being of generally inverted J-shaped cross section with a leading lower edge and each ground engaging member including a lower surface, with the leading edge of the scraper member and the lower surfaces of the ground engaging members being substantially coplanar;

a hitch mounted on said frame for releasable connection to a draft means, said hitch including a pair of laterally spaced apart bottom connection points and a top connection point located in spaced relationship between and above the bottom connection points; and

adjustable lost motion linkage means mounted on the top connection point of said hitch for limiting free pivotal movement of the apparatus toward and away from the draft means about a transverse axis defined by the bottom connection points.

4,585,076

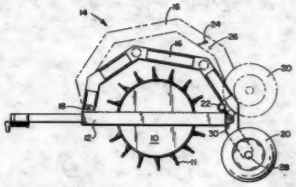
IMPLEMENT AND TRANSPORT WHEEL ASSEMBLY THEREFOR

Robert J. Stevens, Saratoga, and Clinton E. Bromley, Laramie, both of Wyo., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 25, 1984, Ser. No. 573,748

Int. Cl.⁴ A01B *73/00*

U.S. Cl. 172—240 **2 Claims**



1. In the combination of an earth working implement and a transport wheel assembly for maintaining the implement above a level surface for purposes of transporting the implement to a different work site the combination comprising,

an earth working implement mounted on a frame, said frame including a front, two side and a rear portions, the front portion including means to attach the frame to a device for pulling the implement, the implement being supported by means extending from the two side portions,

a bumper pivotally mounted on the rear portion of the frame,

a wheel assembly including at least two spaced apart wheels mounted on an arm pivoted from the front portion of the frame, said arm being configured to be out of contact with said implement at all times,

the bumper being aligned with the arc of rotation of the surface of at least one of said wheels as said one wheel is moved by the arm as it pivots from the front portion of the frame,

said bumper in one position engaging the surface of one wheel to prevent its downward movement toward said level surface,

said rear portion of the frame including means for locking the arm against rotation with the wheels at a lower elevation than the implement to thereby allow the implement to be moved over the level surface without contacting it.

4,585,077

DRILLING MECHANISM OPTIONALLY USABLE AS A ROTARY DRILL OR A HAMMER DRILL

Otto Bergler, Muhlacker-Lomersheim, Fed. Rep. of Germany, assignor to Black & Decker Overseas AG, Vaduz, Liechtenstein

Filed Nov. 4, 1983, Ser. No. 548,764

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241528

Int. Cl.⁴ E02D *7/02*

U.S. Cl. 173—48 **25 Claims**

1. In a drilling mechanism of the type comprising a hollow drive spindle, means for rotating said spindle, an impact bolt longitudinally movable within said spindle, a tool chuck mounted at a front end of said spindle and adapted to carry a

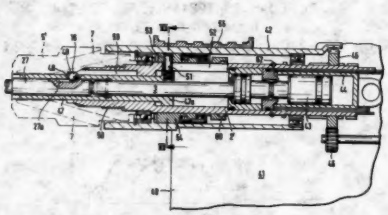
tool, and means for driving said tool selectively in one of a rotary drilling mode and a rotary hammer drilling mode comprising:

a first tool holder including a plurality of tool-clamping jaws disposed in said chuck and operably connected to said spindle to be rotated thereby,

first manually actuable means operably connected to said jaws for moving said jaws between

a tool-clamping position in which forward ends of said jaws converge to grip a rotary drilling tool for preventing axial movement thereof and transmitting rotary forces thereto from said spindle, and

a tool-release position in which said jaw ends diverge to form a space therebetween to release said rotary drilling tool,



a second tool holder arranged to retain a rotary hammer drilling tool in said chuck when said jaws are in said tool-release position, said second tool holder including retaining means for retaining the hammer drilling tool in position to be impacted and moved axially by said impact bolt and to be rotationally driven by said spindle,

second manually actuable means operably connected to said second tool holder for moving said retaining means into a tool retaining position, and

one of said first and second tool holders, when arranged in a tool-retaining position, being disposed to block movement of the other of said tool holders to a tool-retaining position.

4,585,078

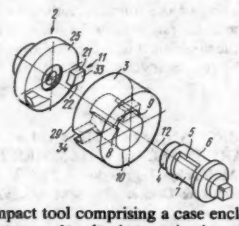
ROTARY IMPACT TOOL

Vladimir M. Alexandrov, Kirovsky prospekt, 25, kv. 53; Anatoly I. Rabinov, Novocherkassky prospekt, 68, kv. 50; Mikhail I. Shalyapin, ulitsa Stasovoi, 2, kv. 164, and Valery I. Jutkevich, prospekt Narodnogo Opolchenia, 241, korpus 2, kv. 28, all of Lenigrad, U.S.S.R.

Filed Sep. 9, 1982, Ser. No. 416,284

Int. Cl.[4] B25D *15/00*

U.S. Cl. 173—93.5 **2 Claims**



1. A rotary impact tool comprising a case enclosing a drive motor, a hammer member having projections on the inner surface thereof, a two-ended, intermediate member having an outer surface and transmitting rotation from said motor to said hammer member and having guide means disposed eccentrically relative to the axis of rotation of said hammer member and intended to transmit rotation from said drive motor to said hammer member as well as to provide translation of said hammer member in a plane perpendicular to the axis of rotation, a spindle arranged coaxially with said intermediate member, embraced by the inner working surface of said hammer member and having on the outer surface thereof projections corresponding to the projections made on the inner working surface of said hammer member to transmit impulse rotation to said spindle; said intermediate member consisting of a disk; said hammer member having in the end face thereof slots, and said guide means consisting of end projections extending into said slots in the end face of said hammer member.

4,585,079

METHOD AND A MACHINE FOR HANDLING DRILL PIPES

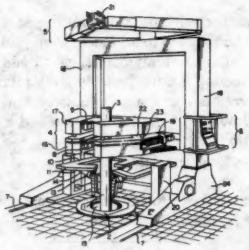
Marc Lemaire, Carquefou, and Roland Le Roc'h, St-Sebastien sur Loire, both of France, assignors to Brissonneau et Lotz Marine, Carquefou-Nantes, France

Filed Apr. 28, 1983, Ser. No. 489,463

Claims priority, application France, Apr. 30, 1982, 82 07538

Int. Cl.[4] E21B *3/04*

U.S. Cl. 173—164 **4 Claims**



1. A machine to apply screwing and unscrewing torque between successive drill pipes and the like with an essentially veritcal axis extending through a tapered opening in a turntable for a well bore, each pipe being provided at opposite ends with threaded portions for connecting the pipe to adjacent pipes, said machine having, in combination, means for applying a high initial unthreading torque and a high final threading torque between successive drill pipes, means for rapid screwing and unscrewing of successive drill pipes, and a clamping mechanism including a bolster and a plurality of shims, said shims having outer portions tapered to fit into said opening of said turntable and having inner portions with a shape corresponding to the shape of the drill pipes, each shim being supported individually on the bolster by powered means for moving the shim into engagement with a drill pipe to grip the same and with sufficient freedom to permit the shims to center the pipe between them automatically, and means for lowering the bolster to cause the shims already gripping the pipe to enter the opening in the turntable, and wherein said powered means for supporting each shim individually comprises a jack and a link, one end of the jack and one end of the link being pivotally connected to the bolster and the other end of the jack and the other end of the link being pivotally connected to the shim.

4,585,080

PORTABLE ROTARY EARTH DRILLING APPARATUS

Calvin P. Bender, 16750 E. Ada Pl., Aurora, Colo. 80012

Filed Feb. 4, 1985, Ser. No. 698,085

Int. Cl.[4] E21B *3/02*; E21C *1/00*

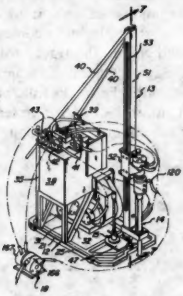
U.S. Cl. 175—170 **17 Claims**

1. Portable earth drilling apparatus comprising:

a base;

a derrick on said base, said derrick including a tubular member, a carriage having a sleeve portion telescoping over and movable on said tubular member, and drive means to move said carriage along said tubular member;

a drill assembly removably supported on said carriage, said drill assembly including a drill motor, a length of pipe, and a drill bit on the end of said pipe;



an anchor assembly supported on said base and set in place by said drill motor for anchoring the base to the earth; and

a drive system for selectively actuating said carriage and drill motor.

4,585,081

METHOD AND APPARATUS FOR DISCHARGING WEIGHING MACHINES IN COMBINATIORIAL WEIGHING APPARATUS

Masao Fukuda, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

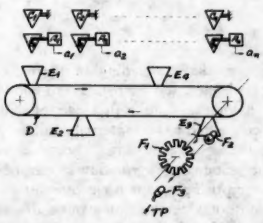
Continuation of Ser. No. 394,926 filed as PCT/JP81/00319 on Nov. 4, 1981, published as WO 82/01769 on May 27, 1982, §102(e) date Jun. 25, 1982, Pat. No. 4,491,189. This application Dec. 14, 1984, Ser. No. 682,508

Claims priority, application Japan, Nov. 7, 1980, 55-157394

The portion of the term of this patent subsequent to Jan. 1, 2002, has been disclaimed.

Int. Cl.⁴ G01G *19/00, 19/22, 19/52, 13/24*

U.S. Cl. 177—1 **7 Claims**



1. A combinatorial weighing method comprising the steps of

(a) charging a plurality of article batch handling means with article batches,

(b) deriving batch weight signals by individually weighing said article batches contained in said article batch handling means,

(c) selecting a combination of said article batch handling means on the basis of said batch weight signals,

(d) identifying article batch handling means selected in said combination,

(e) discharging weighed article batches from said selected article batch handling means,

(f) recharging said discharged article batch handling means, and

(g) repeating (b), (c), (d), (e) and (f) regarding the unselected article batch handling means, omitting each of said selected article batch handling means from step (c) for a predetermined number of cycles before allowing it to participate again.

4,585,082

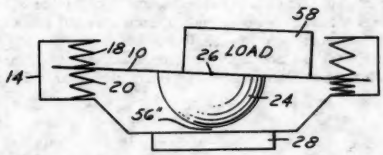
WEIGHT SCALE UTILIZING A CAPACITATIVE LOAD CELL

Richard H. Harrington, 631 Third St., Ann Arbor, Mich. 48103, and Charles W. Krapf, 3642 Partridge Path, Ann Arbor, Mich. 48104

Filed Aug. 17, 1984, Ser. No. 642,123

Int. Cl.⁴ G01G *3/14;* **H01G** *5/01, 7/00, 5/16*

U.S. Cl. 177—210 C **26 Claims**



1. A platform scale comprising a supporting structure, a platform on the supporting structure for movement relative to the supporting structure in response to a weight placed on the platform,

spring means supporting and connecting the platform to the supporting structure, said spring means permitting both linear and rotational movement of the platform relative to the supporting structure,

a variable capacitor having the movable portion thereof affixed to the platform and the fixed portion of the capacitor mounted on the supporting structure, said capacitor configured to provide a change of capacitance upon linear movement of the platform relative to the supporting structure and substantially no change of capacitance with rotational movement of the platform,

electrical means connected to the variable capacitor, said electrical means configured to sense a changed capacitance in the variable capacitor and in resonse thereto to provide an electrical output changed in response to the changed capacitance, and

indication means connected to said electrical means and adapted to respond to the changed output with a changed display of information.

12. The platform scale of claim 1 wherein the electrical means comprises a microprocessor having a system clock variable in frequency in response to changes in the variable capacitance, a reference constant frequency oscillator and programmble counter and a software routine in the microprocessor to accurately determine the capacitance as a function of a variable amount of time to execute a fixed number of instructions.

4,585,083

MECHANISM FOR DETECTING LOAD

Yuzuru Nishiguchi, Tokyo, Japan, assignor to Shinko Denshi Company Ltd., Tokyo, Japan

Filed Oct. 23, 1984, Ser. No. 663,948

Claims priority, application Japan, Nov. 1, 1983, 58-205428; Apr. 11, 1984, 59-71960

Int. Cl.⁴ G01G *3/08, 23/06, 23/02*

U.S. Cl. 177—229 **19 Claims**

1. A mechanism for detecting a load comprising

means including a load shaft member extending in a first direction in which a load to be detected is exerted; and

means including at least one double link mechanism which comprises

a common link member extending substantially in parallel with said load shaft member,

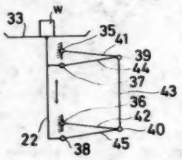
first and second arm members each of which extends in a second direction substantially perpendicular to said first direction, the ends of said first arm member being connected to one end of said load shaft member and one end of said common link member, respectively, and the ends of

said second arm member being connected to opposite ends of said load shaft member and common link member, respectively,

third and fourth arm members extending substantially in parallel with said first and second arm members, respectively, one end of said third and fourth arm members being connected to said ends of said common link member, respectively, and the opposite ends of said third and fourth arm members being connected to a fixed member positioned near said load shaft member,

fifth and sixth arm members having one end of each connected to said ends of said common link member, respectively, and the opposite ends of each connected to a fixed member near said load shaft member,

said first, third and fifth arm members and said second, fourth and sixth arm members being postioned in first and



second planes, respectively, said first and second planes being perpendicular to a plane including said first and second directions, whereby said first and second arm members extend between said third and fifth arm members and between said fourth and sixth arm members, respectively,

flexure members formed in each of said arm members at said ends thereof, whereby said first and second arm members and common link member form a first parallelogram link mechanism, said third and fourth arm members and common link member form a second parallelogram link mechanism having substantially the same dimension as that of the first parallelogram link mechanism, and said fifth and sixth arm members and common link member form a third parallelogram link mechanism having substantially the same dimension as that of the first parallelogram link mechanism.

4,585,084

AGRICULTURAL TRACTOR

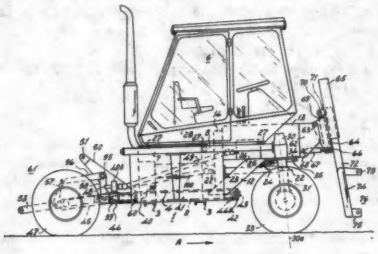
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Sep. 21, 1983, Ser. No. 534,501

Claims priority, application Netherlands, Sep. 21, 1982, 8203654

Int. Cl.[4] B60K *17/28*; B62D *49/00*

U.S. Cl. 180—53.1 **37 Claims**



1. An agricultural tractor comprising at least one power take-off shaft, at least four front ground wheels and at least four rear ground wheels, each of said ground wheels including a low-pressure, low profile tire, each said ground wheel having a diameter of approximately 1.3 meters and providing a relatively large area in continuous contact with the ground, and an engine of at least fifty kilowatts of available power for driving at least four of said ground wheels, the tracks followed by said four wheels being substantially non-coinciding during the tractor's straight-ahead travel, the tracks followed by two of said front wheels being substantially contiguous and substantially non-overlapping with the tracks followed by two of said front wheels so that the soil structure underlying said tracks remains intact without adverse effects on subsequent plant growth.

4,585,085

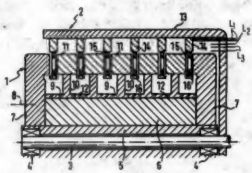
ELECTRIC WHEEL-DRIVE FOR MOTOR VEHICLES, IN PARTICULAR FOR NONDESTRUCTIVE HYBRIDIZATION OF AUTOMOBILES

Peter H. Handel, Physics Department, University of Missouri, St. Louis, Mo. 63121, and Peter Handel, Hans Stiessberger Str. 6, 8013 Haar, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,725

Int. Cl.[4] B60K *7/00*

U.S. Cl. 180—65.2 **9 Claims**



1. In a motor vehicle including an internal combustion engine, four wheels mounted for rotation to said vehicle, each of said wheels having an axle, a first pair of said wheels being operatively connected to said internal combustion engine so as to be driven thereby, a pair of bearings mounted on said axle, a support tube mounted for rotation to said bearings, the improvement comprising means for providing an electric drive for the non-internal combustion engine driven pair of said wheels, said electric drive means comprising a homopolar axial field motor including a stator and a rotor, said stator forming a brake shoe and said rotor forming one of a brake drum and disc for respective ones of said non-internal combustion engine driven wheel pair, a permanent magnet of high energy density material mounted to said support tube and rotatable therewith, at least one iron disc mounted on said support tube in close proximity to said permanent magnet, said stator including an enclosure, a plurality of support elements mounted to said enclosure and extending radially inwardly therefrom, and a plurality of coils mounted on said support elements in spaced relationship to one another, a plurality of pole rings mounted on said permanent magnet, said pole rings including a plurality of radially extending support arms, and a plurality of axially magnetized pole pieces, said pole pieces being constructed of high energy density material, respective ones of said pole pieces being positioned between respective pairs of said coil plurality.

4,585,086

MOTOR VEHICLE FRAME MATERIAL AND FRAME CONSTRUCTION USING THE SAME

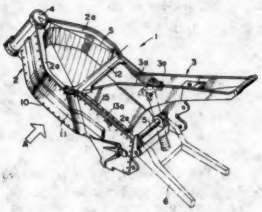
Kinuo Hiramatsu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1984, Ser. No. 640,967

Claims priority, application Japan, Aug. 18, 1983, 58-151031; Aug. 18, 1983, 58-151035; Aug. 18, 1983, 58-151036

Int. Cl.[4] B62D *61/02;* B62K *1/00*

U.S. Cl. 180—219 12 Claims



1. A frame construction for use in a motor vehicle having front and rear forks, comprising:

(a) a main frame including a head pipe for supporting the front fork angularly movably and a pivot for supporting the rear fork swingably;

(b) said main frame comprising a pair of right and left first structures and a cross member interconnecting said first structures, each said first structure comprising an elongated hollow body having a rectangular cross section and a honeycomb member disposed in said hollow body and having a multiplicity of independent divided chambers;

(c) said honeycomb member being arranged such that said divided chambers have central axes directed substantially perpendicularly to longer sides of the rectangular cross section of said hollow body;

(d) each said first structure of said main frame extending substantially rectilinearly in side elevation along a line interconnecting said head pipe and said pivot; and

(e) said pair of first structures and said cross member jointly constituting substantially an isosceles triangle with said head pipe located in plan at a vertex subtending said cross member.

4,585,087

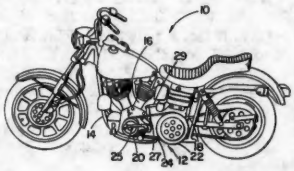
MOTORCYCLE HAVING BELT DRIVE CONVERSION

Carl Riccitelli, 26 Whitney Ct., Hamden, Conn. 06518

Filed Jun. 3, 1985, Ser. No. 740,288

Int. Cl.[4] B62D *3/00;* G05G *1/14*

U.S. Cl. 180—230 7 Claims



1. In combination with a motorcycle having a frame, an engine mounted on the frame and having a rotary drive shaft projecting laterally outwardly therefrom, a transmission mounted in fixed position on the frame and having a rotary transmission shaft projecting laterally outwardly therefrom in parallel relation to the drive shaft, a shift lever shaft supported for rotary movement relative to said frame and projecting laterally outwardly between the drive shaft and the transmission shaft in generally parallel relation thereto, a shift lever mounted on the outer end of said shift lever shaft, and a foot peg mounted in a stock position forward of said shift lever shaft, the improvement comprising a belt drive system including a cogged drive pulley mounted on the engine shaft for rotation therewith, a cogged drum mounted on the transmission shaft for rotation therewith, a cogged drive belt drivingly connecting said drive pulley to said drum, and means for supporting said shift lever shaft substantially along its length and including a mounting bracket assembly including an elongated tubular member having a coaxial bore receiving said shift lever shaft therethrough and supporting said shift lever shaft at least near its opposite ends, a generally L-shaped bracket attaching member mounted in fixed position to the inner end of said tubular member and having legs extending radially outwardly relative to the axis of said tubular member, said legs having apertures near the outer ends thereof in registry with existing threaded fastener receiving openings in a part of said motorcycle, said mounting bracket assembly having a peg mounting member secured in fixed position to the outer end of said tubular member and extending in a radially forward direction therefrom, said peg mounting member having a peg mounting hole near its forward end for receiving said peg therethrough, means for securing said peg to said peg mounting member, threaded fasteners extending through said apertures and threadably engaged within the threaded openings in said part and securing said brackets in fixed position relative to said motorcycle, said peg mounting member supporting said peg in its stock position.

4,585,088

ARTICULATED ROAD VEHICLE WITH ENGINE SPACED REARWARDLY OF DRIVEN WHEELS

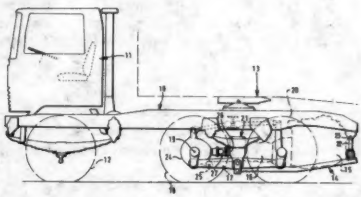
David F. Ward, 9 Honeypot Lane, Brentwood, Essex, England

Filed Jul. 31, 1984, Ser. No. 636,391

Claims priority, application United Kingdom, Aug. 12, 1983, 8321718

Int. Cl.[4] B60K *7/00*

U.S. Cl. 180—295 3 Claims



1. An articulated, freight-carrying road vehicle comprising a tractor and a semi-trailer, wherein the tractor has a chassis, steerable front wheels mounted on the chassis, first and second sets of rear wheels mounted for rotation about respective axes which are spaced apart along the chassis, an engine, transmission means for transmitting drive from the engine to at least the wheels of said first set, suspension means for transmitting a downwardly directed load from the chassis to the wheels of said sets while permitting limited upward and downward movement of said axes relative to the chassis and a fifth wheel coupling assembly on the chassis, wherein the engine is disposed partly between the wheels of said second set, the engine is spaced rearwardly from the axis of the wheels of said first set, there is provided support means for supporting the weight of the engine at two only positions spaced longitudinally of the tractor, said support means comprising support pivot means at a rear end of the engine for connecting the engine with the chassis at a position to the rear of the engine and in a manner to permit limited upward and downward movement of a front end of the engine relative to the chassis while restraining up-

ward and downward movement of the rear end of the engine relative to the chassis and a further support at a position between the wheels of said first set for so connecting the engine with wheels of the first set that a substantially fixed relation is maintained between the engine and the axis of the wheels of the first set.

4,585,089

COUPLING ELEMENT FOR A HEARING AID

Christian Topholm, Verlose, Denmark, assignor to Topholm & Westerman I/S, Verlose, Denmark

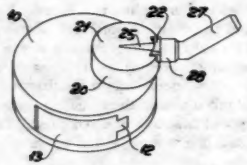
PCT No. PCT/DK84/00038, § 371 Date Jan. 4, 1985, § 102(e) Date Jan. 4, 1985, PCT Pub. No. WO84/04645, PCT Pub. Date Nov. 22, 1984

PCT Filed May 15, 1984, Ser. No. 694,401

Claims priority, application Denmark, May 16, 1983, 2171/83

Int. Cl.[4] A61B *7/02*

U.S. Cl. 181—135 **1 Claim**



1. A coupling element for establishing acoustic connection between a hearing aid placed in the concha and having a substantially cylindrical housing (**10**) with a sound exit nipple (**14**) placed in the vicinity of the periphery of said housing, said housing being placed with the nipple facing inwardly into a custom moulded ear plug (**29**) placed in the auditory canal, characterized in that said coupling element consists of a substantially disc-shaped part (**20**), which is adapted to be detachably and rotatably attached to the nipple (**14**) of the hearing aid housing (**10**), a laterally directed spout (**23**) formed on said disc-shaped part for rotary movement with said disc-shaped part relative to said sound exit nipple, and an angularly bent tube section (**27**) rotatably mounted on said laterally directed spout.

4,585,090

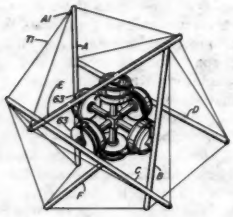
ISOTROPHIC LOUDSPEAKER

Scott Lindsay, 34 Fishermill Rd., Cambridge, Ontario, Canada (N3C 1C7)

Filed Jul. 9, 1985, Ser. No. 753,106

Int. Cl.[4] G10K *13/00*; H04R *7/00*

U.S. Cl. 181—163 **7 Claims**



1. An acoustic device comprising electro-mechanical transducer means arranged to convert a fluctuating input electrical signal into vibratory mechanical movement of a driven element, an envelope substantially completely enclosing a volume of air, and coupling means by which the driven element is so coupled to the envelope that vibratory movement of the driven element causes substantially all parts of the envelope to move alternately in unison in an outwards direction and in unison in an inwards direction in a vibratory manner and so produce atmospheric pressure waves, wherein the envelope encloses a framework comprising struts and tensile members, the struts being selectively coupled at their ends by the tensile members, the transducer means act upon two parallel struts, one of which forms the driven element, to cause relative movement between those two struts in a direction transverse to the lengths of the two struts, and the envelope comprises a number of emitter elements selectively mounted along their edges on the tensile members and the struts.

4,585,091

APPARATUS FOR REPAIRING OR PROTECTING AN ENGINE EXHAUST SYSTEM

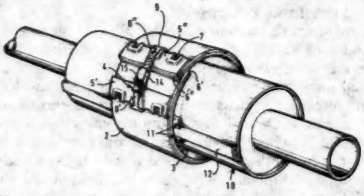
George V. Budd, Broadway, 108 Uxbridge Road, Harrow, Middlesex, England

Filed Jul. 20, 1984, Ser. No. 633,054

Claims priority, application United Kingdom, Aug. 4, 1983, 8321075; Sep. 23, 1983, 8325551; Nov. 10, 1983, 8329951

Int. Cl.[4] F01N *7/18*; B21D *53/00*; B23P *6/00*

U.S. Cl. 181—243 **6 Claims**



1. Apparatus suitable for repairing or protecting an exhaust box or pipe in the exhaust system of an internal combustion engine, comprising a flexible sheet formed of a heat resistant material and fastening means for securing the flexible sheet in place when the sheet is wrapped round the exhaust box or pipe so that a seal is provided between the sheet and the exhaust box or pipe, the fastening means comprising first and second fastening members, the first fastening member comprising a fastening strip formed along its length with a plurality of substantially parallel recesses or slots and the second fastening member comprising a body receiving the fastening strip, the body having a rotatable screw-threaded portion which engages the slots when the fastening strip is received in the body so that, when the screw-threaded portion is rotated, the connection between the first and second fastening members is adjusted.

4,585,092

DEVICE FOR SETTING THE ATTITUDE AND THE MEASURING HEIGHT OF THE BODY OF A VEHICLE TO BE CHECKED ON A SURFACE PLATE, ELEVATOR, STAYS OR OTHER MEANS WITHOUT SUBJECTING IT TO ANY WARPING STRESS

Michael Dossier, Orgeval, France, assignor to Facom, Morangis, France

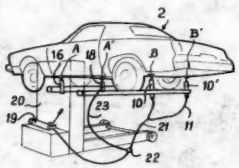
Filed Sep. 29, 1982, Ser. No. 426,741

Int. Cl.[4] B60S *13/00*

U.S. Cl. 187—8.45 **9 Claims**

1. A device for setting the attitude and the measuring height of the body of a vehicle without subjecting it to any warping stress, said device being combined with said body of the vehicle and comprising four support means located at four corners of a four-sided configuration symmetrically arranged relative to a middle vertical longitudinal plane, which plane coincides with a middle vertical longitudinal plane of the vehicle body, a first two of said support means pertaining to one of said four sides directly supporting said body adjacent to a first end of

said body and laterally adjacent to lateral sides of said body, a second two of said support means directly supporting said body adjacent to a second end opposed to said first end of said body and laterally adjacent ot lateral sides of said body, freely operative balancing means interconnecting said first two of



said support means such that when one of said first two support means freely descends the other of said first two support means automatically freely rises to the same extent and vice-versa, and means for adjusting the balancing means in height relative to said second two of said support means.

4,585,093

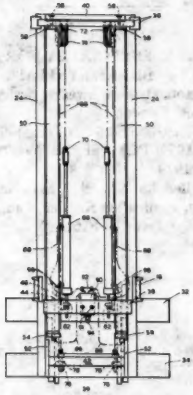
UPRIGHT FOR LIFT TRUCK

Rudolph C. Barda, Jr., Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 18, 1984, Ser. No. 611,761

Int. Cl.[4] B66B *9/20;* **F01L** *15/00;* **F01B** *1/02*

U.S. Cl. 187—9 E **9 Claims**



1. An upright structure for lift trucks and the like comprising a relatively fixed upright section, a telescopic upright section mounted for elevation relative to the fixed section, load carrier means mounted for elevation relative to said telescopic section, a pair of transversely spaced main lift cylinders mounted adjacent opposite sides of the upright supported at the lower ends thereof from the fixed upright section and being connected at the upper ends thereof to the telescopic upright section, a pair of flexible lifting and sprocket means, the sprocket means being supported from the upper end of the telescopic upright section and the flexible lifting means being reeved thereon and secured at one ends to the load carrier means, a pair of transversly spaced free-lift hydraulic cylinders functioning as movable anchor means secured at one ends to a member fixed relative to the fixed upright section, the opposite ends thereof being movably connected to the opposite ends of said flexible lifting means, said pairs of main and free-lift cylinders being connected hydraulically in parallel by pressure fluid supply means and sequencing automatically to first elevate the load carrier in free-lift and then to elevate the telescopic upright section and the load carrier thereon, and wherein continuing the supply of pressure fluid to the pairs of cylinders subsequent to the elevation of the load carrier to its maximum elevation in the telescopic section causes the main cylinders to effect further elevation of the load carrier together with the telescopic section to full stroke positions of the main cylinders while causing the free-lift cylinder to extend from retracted positions thereby pumping a volume of hydraulic fluid from the free-lift cylinders to the main cylinders, said free-lift cylinders being replaceable by fixed anchor means and spacer means provided between the tops of the main lift cylinders and the telescopic upright member to which the main cylinders are connected to provide substantial planar coincidence of the fixed and telescopic sections at the top and bottoms thereof when the upright is fully retracted, said spacer means being removable when said fixed anchor means replaces said free-lift cylinders in order to provide a small negative lift to the telescopic section when the upright is fully retracted.

4,585,094

HYDRAULIC RIM BRAKE FOR BICYCLES

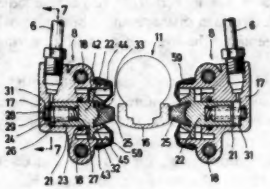
Ludwig Rottenkolber, Urach, and Manfred Schwab, Lenningen, both of Fed. Rep. of Germany, assignors to Gustav Magenwirth GmbH & Co., Fed. Rep. of Germany

Filed Oct. 4, 1984, Ser. No. 657,769

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336123

Int. Cl.[4] B62L *1/10*

U.S. Cl. 188—24.22 **4 Claims**



1. In a bicycle having a frame and handle bars and a wheel with a rim, a hydraulic brake assembly comprising a triggering assembly carried by one of said handle bars, a hand lever for actuating said triggering assembly, a pair of brake cylinder housings mounted on said frame in opposed relationship to each other on opposite sides of said wheel rim, pressure lines connecting said triggering assembly to said brake cylinder housing, pistons displaceable in said brake cylinder housings, a brake shoe support on one end of each of said pistons, a brake shoe on each of said supports for engaging said rim, each of said brake shoe supports being a flange connected to its associated piston and being displaceable parallel to the motion of the brake piston characterized in that slide guiding means (**42, 43, 44, 45; 53, 54, 55, 56**) are connected in a protruding manner to the ends of the brake cylinder housings (**17, 47**) facing the flanges (**32, 52**), said slide guiding means surrounding the outer side walls (**42, 43; 55**) of said flanges and including inner side walls (**42, 45**) oriented perpendicularly to the direction of travel (F) of the bicycle, said inner side walls (**42, 45**) resting against the outer side walls (**42, 43; 55**) of the flanges (**32, 52**) to act as abutments for absorbing braking forces to inhibit bending of parts, the peripheral inner contours of said slide guiding means and flanges surrounded by the slide guiding means being non-circular and complementary to inhibit relative twisting of the flanges and the slide guiding means.

4,585,095

ACTUATING DEVICE FOR A DISC BRAKE

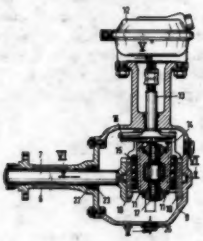
Gerd Idel, Stockheim, Fed. Rep. of Germany, assignor to Bergische Achsenfabrik, Fr. Kotz & Sohne, Wiehl, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,674

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1983, 3325085

Int. Cl.[4] F16D 51/00

U.S. Cl. 188—71.9 2 Claims



1. An actuating device for a disc brake for a vehicle which disc brake has a first and a second brake jaw located on opposite sides of a brake disc which brake jaws have brake linings theron, the brake jaws having a retracted position in which the linings thereon are spaced from respective sides of the brake disc a predetermined distance and a braking position, in which the linings engage the brake disc, said actuating device comprising:

traction and pressure rods cooperating with said brake jaws, respectively, and movable in opposite directions for moving the brake jaws from their retracted positions into their braking position,

wedge actuation means for moving said traction and pressure rods to effect movement of the brake jaws to their braking position, said wedge actuation means comprising two outer wedges connected with said traction and pressure rods, respectively, for joint movement therewith and two inner wedges engaging said two outer wedges and movable relative thereto in a direction transverse to the direction of movement of said traction and pressure rods to apply a force to said two outer wedges to effect movement of said traction and pressure rods, and

an automatic resetting device for resetting the retracted position of the brake jaws to compensate for wear of the brake linings and to maintain said predetermined distance, said automatic resetting device comprising wedge pieces disposed between said two inner wedges and defining a nonactuating position thereof which in turn defines the retracted position of the brake jaws, said wedge pieces being joined together by a threaded bolt rotatable to move said wedge pieces between said two inner wedges to change said nonactuating position thereof to thereby effect resetting of the retracted position of the brake jaws, said threaded bolt having a one-way clutch collar thereon, and a resetting lever attached to said one-way clutch collar for rotating said threaded bolt, means associated with one of said pressure and traction rods and cooperating with said resetting lever to effect rotation of said threaded bolt upon movement of said one of said pressure and traction rods in excess of a predetermined amount.

4,585,096

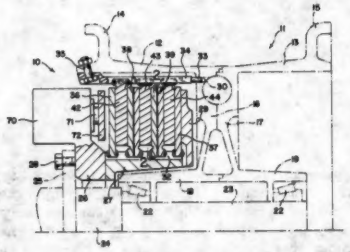
BRAKE APPARATUS

Lowell D. Bok, Anna, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 3, 1984, Ser. No. 637,357

Int. Cl.[4] F16D 65/06

U.S. Cl. 188—73.37 5 Claims



1. In a multiple disc brake or clutch assembly having a plurality of discs, at least one of said discs having a pair of spaced annular disc members, a separator disc member interposed between said pair of disc members, said separator disc member is thin in cross-section relative to the cross-section of any one of said adjacent disc members and being operative to dampen vibration and reduce noise between said disc members, and said separator disc is a thin annular member less than one-tenth of the thickness of any adjacent disc member.

4,585,097

SLACK ADJUSTER, ESPECIALLY FOR A RAIL VEHICLE BRAKE SYSTEM

Lars M. Severinsson, Hishult, Sweden, assignor to SAB Industri AB, Landskrona, Sweden

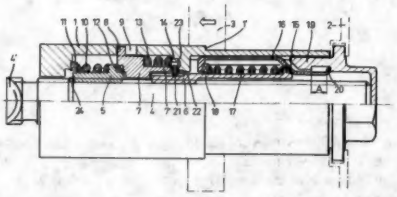
PCT No. PCT/SE79/00019, § 371 Date Sep. 13, 1979, § 102(e) Date Sep. 13, 1979, PCT Pub. No. WO79/00557, PCT Pub. Date Aug. 23, 1979

PCT Filed Jan. 25, 1979, Ser. No. 149,200

Claims priority, application Sweden, Jan. 27, 1978, 7801009

Int. Cl.[4] F16D 65/52

U.S. Cl. 188—199 7 Claims



1. A single acting slack adjuster, especially for a rail vehicle brake system, comprising in combination an adjuster tube movable in a forward direction in response to a brake force in a brake application stroke direction, a spindle axially movable in said tube, an adjuster nut and a leader nut, which nuts are in non-self-locking thread engagement with the spindle, a clutch ring disposed non-rotatably about said spindle, means biasing the adjuster nut in a backward direction in engagement with said clutch ring, a control sleeve axially movable in the tube and the movement forward thereof being limited to a distance (A) corresponding to the desired slack, means biasing the leader nut in a backward direction in engagement with the control sleeve, means coupling a braking force on the spindle through the adjuster nut and clutch ring in coaction, and lock-

ing means including a clutch biased by a compression spring coupling the leader nut and the clutch ring in coaction in response to said braking force on the spindle for locking the leader nut with the clutch ring against rotation upon compression of said spring to a counter-force on the spindle during the brake application stroke.

4,585,098

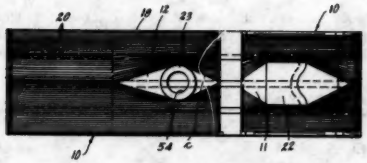
FILAMENT-REINFORCED COMPOSITE TRANSMISSION BRAKE BAND

Ronald J. Pike, New Baltimore, Mich., assignor to D.A.B. Industries, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 389,843, Jun. 18, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 544,605

Int. Cl.⁴ F16D *65/06*

U.S. Cl. 188—251 A **8 Claims**



6. A friction band assembly comprising an arcuate band having adjacent end portions provided with load transfer lugs, said arcuate band comprising an elongated strap of filament-reinforced plastic material extending from one end portion of said arcuate band to the other, and a strip of friction material extending along the radially inner side of said strap of filament-reinforced plastic material, said strap of plastic material comprising a multiplicity of continuous, elongated, pretensioned flexible reinforcing filaments embedded in a plastic matrix and extending lengthwise of said strap and circumferentially of said arcuate band from one end portion thereof to the other, said strap of filament-reinforced plastic material having a length which at the ends of said arcuate band is folded back circumferentially upon itself and over said lugs to anchor said lugs in the folds thereof in a manner such that the loading of said arcuate band, as transferred by said lugs, is tensile and coincident with said circumferentially extending flexible reinforcing filaments.

4,585,099

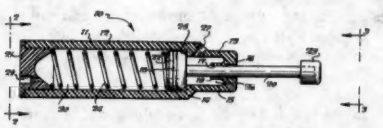
MOLDED PLASTIC CYLINDER FOR ENERGY ABSORBERS, FLUID CYLINDERS, AND THE LIKE

Paul H. Taylor, Grand Island, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed Jan. 10, 1984, Ser. No. 569,777

Int. Cl.⁴ F16F *9/32*

U.S. Cl. 188—322.19 **10 Claims**



1. A molded plastic body for an energy absorber, fluid cylinder, or the like, comprising a main body portion having a first outer diameter and a first thickness, an end body portion molded integrally with said main body portion and forming a continuation of said main body portion and extending axially thereof, said end body portion having a second outer diameter which is less than said first outer diameter and also having a second thickness which is not substantially greater than said first thickness such as to avoid formation of voids in said second thickness, and an internal shoulder located substantially at the junction of said main body portion and said end body portion.

4,585,100

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION HAVING TORQUE CONVERTER WITH LOCK-UP MECHANISM

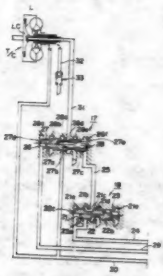
Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 3, 1983, Ser. No. 538,276

Claims priority, application Japan, Jan. 14, 1982, 57-3490

Int. Cl.⁴ F16D *33/00*

U.S. Cl. 192—3.31 **2 Claims**



1. In a hydraulic control system for an automatic transmission having a torque converter with a lock-up clutch, the automatic transmission having a plurality of forward speed ratios including a mth speed ratio and a m+1th speed ratio, where: m is an integer, the hydraulic control system having a portion wherein a fluid pressure is present during operation in each of the mth speed ratio and m+1th speed ratio,

a lock-up valve including a spool movable between a clutch engagement position wherein the lock-up clutch is engaged and a clutch release position wherein the engagement of the lock-up clutch is released, and a spring biasing said spool toward the clutch release position;

said spool of said lock-up valve having a first pressure acting area which is exposed to the fluid pressure in the portion of the hydraulic control system and being urged against said spring toward the clutch engagement position, said spool having a second pressure acting area;

means for applying another fluid pressure to said second pressure acting area during shifting between the mth speed ratio and the m+1th speed ratio to urge said spool toward said clutch release position.

4,585,101

POWER TRANSMISSION MECHANISM FOR AUTOMOTIVE VEHICLES

Yoshiaki Danno, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 359,890, Mar. 19, 1982. This application May 2, 1985, Ser. No. 729,090

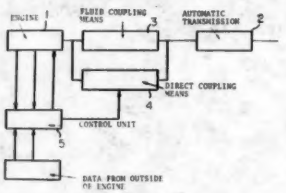
Claims priority, application Japan, Mar. 23, 1981, 56-40447; Feb. 10, 1982, 57-20462

Int. Cl.⁴ B60K *41/02*

U.S. Cl. 192—3.31 **5 Claims**

1. A power transmission mechanism for automative vehicles comprising a variable displacement engine which can be selectively placed in a first operation mode in which all of the cylinders are active and a second operation mode in which selected ones of the cylinders are only active, under control of number-of-cylinder control means including means for changing over the number of active cylinders, fluid coupling means

disposed between a driving shaft of said variable displacement engine and a driven shaft in a vehicle for effecting torque transmission between said driving shaft and said driven shaft, direct coupling means disposed between said driving shaft and said driven shaft for effecting torque transmission between said driving shaft and said driven shaft in a relation functionally parallel to the torque transmission through said fluid coupling means, suspension cylinder determining means for generating and applying a command signal commanding change-over of the number of active cylinders to said number-of-cylinder control means so as to place said variable displacement engine in one of said first operation mode and said second operation



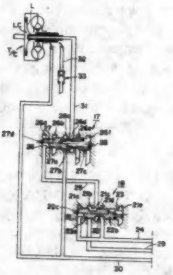
mode depending on the operating conditions of at least one of said engine and said vehicle, and coupling change-over means operative in response to the command signal generated from said suspension cylinder determining means for selectively effecting the torque transmission through said fluid coupling means and said direct coupling means, said coupling change-over means operating so that the torque transmission between said driving shaft and said driven shaft is effected through said fluid coupling means during change-over of the number of active cylinders and during the operation of said engine of said second operation mode under command of the command signal generated from said suspension cylinder determining means.

4,585,102

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION HAVING TORQUE CONVERTER WITH LOCK-UP MECHANISM

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 3, 1983, Ser. No. 538,427
Int. Cl.⁴ F16D *33/00*
U.S. Cl. 192—3.31 **6 Claims**



1. In a hydraulic control system for an automatic transmission for a vehicle having a torque converter with a lock-up clutch, the automatic transmission having a plurality of forward speed ratios including a m th speed ratio and a m+1 th speed ratio, where: m is an integer, the hydraulic control system having a first portion wherein a first fluid pressure is present during operation in each of the m th speed ratio and the m+1 th speed ratio, and a second portion wherein a second fluid pressure is present during operation in one of the m th speed ratio and m+1 th speed ratio and absent during operation in the other speed ratio,

a lock-up valve including a spool movable between a clutch engagement position wherein the lock-up clutch is engaged and a clutch release position wherein the engagement of the clutch is released, and a spring biasing said spool toward the clutch release position,

said spool of said lock-up valve having a pressure acting area which is exposed to the first fluid pressure and being urged against said spring toward the clutch engagement position;

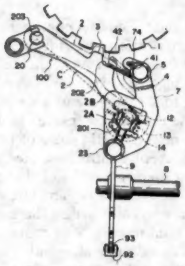
means responsive to the second fluid pressure for applying the second fluid pressure to said pressure acting area instead of the first fluid pressure.

4,585,103

AUTOMATIC TRANSMISSION LOCKING MECHANISM FOR PARKING

Yoshinari Kuwayama; Masakatsu Miura, both of Anjo, and Kunio Morisawa, Toyota, all of Japan, assignors to Aisin-Warner K.K., Anjo and Toyota Jidosha K.K., Toyota, both of, Japan

Filed May 27, 1983, Ser. No. 498,910
Claims priority, application Japan, May 28, 1982, 57-91724
Int. Cl.⁴ B60K *41/26*
U.S. Cl. 192—4 A **3 Claims**



1. A parking lock mechanism for an automatic transmission comprising:

(a) a parking gear having teeth at its periphery and rotatably mounted on an output shaft;

(b) a pawl having a detent, pivotably mounted between a locking position in which the pawl is brought toward and into mesh with said parking gear through said detent and a releasing position in which the pawl is brought away and out of mesh from said parking gear through said detent;

(c) a spring continuously exerting a force biasing said pawl toward the releasing position;

(d) a rod mounted so as to be axially advanced, retracted and vibrated in a direction perpendicular to a plane in which said pawl pivots;

(e) a cam having an inclined surface at one end and secured to said rod at its other end, said inclined surface adapted to slidably push said pawl to pivot it toward the locking position against the force of said spring as the rod is axially advanced and allow said pawl to pivot back toward the releasing position by the force of said spring as the rod is axially retracted; and

(f) said pawl having a cam engaging surface for engagement with said cam, the cam engaging surface is adapted so that the axial vibration of the cam and the oscillation of the pawl is on a plane extending along a normal line to the axis of rotation of the pawl and the inclined surface of the cam so as to reduce, to the least possible degree, the relative slip in a direction perpendicular to the direction of advancement of the cam between the pawl and the cam, to

attain smooth relative movement between the cam and the pawl and thereby reduce the wear of the cam.

4,585,104

CLUTCH DISK FOR A CLUTCH AND METHOD OF TREATING A FACING OF A CLUTCH

Hiroshi Komatsu, Hachioji, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 7, 1982, Ser. No. 415,765

Claims priority, application Japan, Sep. 8, 1981, 56-141946

Int. Cl.⁴ F16D *69/02*

U.S. Cl. 192—70.14 **12 Claims**

1. A clutch disk for a clutch having iron members and used in a vehicle, the clutch disc being operatively frictionally engageable with the iron members of the clutch so as to raise the temperature to 200°–300° C., comprising

a porous metallic facing provided on each side of the clutch disk, the facings respectively engaging with the iron members of the clutch,

each of said facings is impregnated with a volatile rust preventive which vaporizes at a temperature of 200°–300° C., such that upon the operative frictional engagement of the facings with the iron members of the clutch the rust preventive inside the facings vaporizes and forms a rust preventive film on the surfaces of the facings preventing rusting of the iron members.

4,585,105

MULTIPLE DISC CLUTCH DEVICE AND METHOD OF MANUFACTURE THEREOF

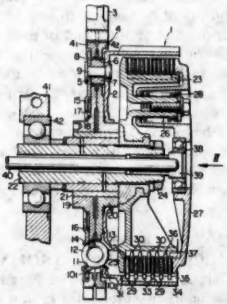
Tomoyuki Iio, and Katsuaki Mori, both of Hamamatsu, Japan, assignors to Fuji Chemical Co., Ltd., Japan

Filed Aug. 18, 1983, Ser. No. 524,218

Claims priority, application Japan, May 20, 1983, 58-75625[U]

Int. Cl.⁴ F16D *3/14, 13/52*

U.S. Cl. 192—70.17 **3 Claims**



1. An improved method of manufacturing a multiple disc clutch device including a cylindrical clutch outer member having a cylindrical portion opened at its one end and closed at its other end by a closing end wall, said cylindrical portion being provided at an inner periphery thereof with a plurality of concave grooves formed along generated lines of said cylindrical portion at a constant circumferential pitch; a plurality of driving clutch discs each having a plurality of convex portions formed on an outer periphery thereof and slidably engaging with said concave grooves in said clutch outer member; a driven gear provided on an outer surface of said closing end wall of said clutch outer member, said driven gear being rotatable within a limited angle of rotation relative said clutch outer member; a plurality of first spring retainers formed on said driven gear; a plurality of second spring retainers formed on said closing end wall of said clutch outer member corresponding to and opposing said first spring retainers; and a plurality of buffer springs each disposed between said opposing first and second spring retainers; the improvement comprising:

forming said clutch outer member of steel sheet;

roll-forming said plurality of concave grooves in said inner periphery of said cylindrical portion of said clutch outer member;

press-forming said second spring retainers on said closing end wall;

welding a plurality of cylindrical bosses to said outer surface of said closing end wall of said clutch outer member;

positioning said driven gear over said plurality of cylindrical bosses of said closing end wall of said clutch outer member, said plurality of cylindrical bosses being received in corresponding slots formed in said driven gear; and

fixing a side plate lapping a disc portion of an outer surface of said driven gear to said plurality of cylindrical bosses by riveting.

4,585,106

ANNULAR SLAVE CYLINDER FOR MOTOR VEHICLE CLUTCH CONTROL MECHANISM

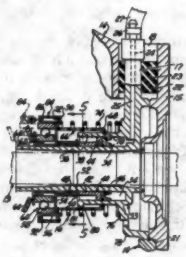
Graham J. Shirley, Troy, Mich., assignor to Automotive Products plc, Warwickshire, England

Continuation-in-part of Ser. No. 469,284, Feb. 24, 1983. This application Mar. 21, 1983, Ser. No. 477,159

Claims priority, application United Kingdom, May 28, 1982, 8215789

Int. Cl.⁴ F16D *23/14, 25/08*

U.S. Cl. 192—85 CA **4 Claims**



1. An apparatus for controllably operating a motor vehicle clutch, said apparatus comprising a hydraulic master cylinder, a hydraulic slave cylinder and a conduit interconnecting the master cylinder and the slave cylinder, said hydraulic slave cylinder being disposed concentric to an input shaft from said motor vehicle clutch to a gearbox, said slave cylinder comprising walls formed by a first tubular member disposed concentric to said shaft and a second tubular member spaced apart from said first tubular member and disposed concentric to said first tubular member, a clutch throw-out bearing disposed peripherally around said first tubular member, said throw-out bearing having an inner race and an outer race, an annular piston reciprocably disposed between the cylinder walls formed by said first tubular member and second tubular member, and a throw-out bearing carrier in the form of a sleeve slidably dis-

posed around said first tubular member between said throw-out bearing and said piston, said sleeve having one end in engagement with said piston and another end forming a rim for mounting therein said throw-out bearing outer race, biasing means constantly urging said throw-out bearing longitudinally outwardly for engagement of said throw-out bearing inner race with a release mechanism for said clutch, a dust cover formed as a tubular member, an inwardly directed integral flange at one end of said dust cover having an edge in sliding engagement with the peripheral surface of said second tubular member, means attaching the other end of said dust cover to said throw-out bearing carrier for displacement of said dust cover in unison with said throw-out bearing, at least one lug outwardly projecting from the peripheral surface of said second tubular member for abutting engagement with said dust cover flange for limiting the outward displacement of said throw-out bearing by said biasing means, and an inwardly projecting indentation on said dust cover tubular member, said indentation extending longitudinally and preventing rotation of said dust cover through lateral engagement with said lug.

4,585,107

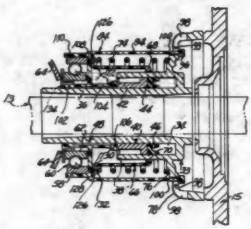
THROW-OUT BEARING CARRIER MEMBER FOR MOTOR VEHICLE CLUTCH CONTROL MECHANISM

Keith V. Leigh-Monstevens, Troy, Mich., assignor to Automotive Products plc, Warwickshire, England

Filed Mar. 21, 1983, Ser. No. 477,160

Int. Cl.[4] F16D *23/14, 25/08*

U.S. Cl. 192—85 CA **4 Claims**



1. An apparatus for controllably operating a motor vehicle clutch, said apparatus comprising a hydraulic master cylinder, a hydraulic slave cylinder and a conduit interconnecting the master cylinder and the slave cylinder, said hydraulic slave cylinder being disposed concentric to an input shaft from said motor vehicle clutch to a gearbox, said slave cylinder comprising a pair of spaced apart concentrically disposed inner and outer tubular members, the inner tubular member projecting beyond the outer tubular member, and annular piston disposed reciprocably between said inner tubular member and said outer tubular member, a throw-out bearing for actuating said clutch, said throw-out bearing having an inner race disposed around said inner tubular member beyond said outer tubular member and an outer race, a throw-out bearing carrier disposed around said inner tubular member, said throw-out bearing carrier having a first end in abutting engagement with said piston and a second end supporting the outer race of said throw-out bearing, and biasing means constantly urging said throw-out bearing in a direction engaging the inner race of said throw-out bearing with a release mechanism for said clutch, wherein said throw-out bearing carrier is in the form of a sleeve of molded relatively resilient and flexible plastic having at said second end an outwardly radially extending integral flange, an integral rim extending longitudinally from said flange, said outer race of throw-out bearing being supported within said rim, an integral tubular portion extending beyond said flange in sliding engagement internally with said inner tubular member, said tubular portion terminating in a continous resilient and flexible lip in firm sliding engagement with a corresponding peripheral surface of said inner tubular member, said lip being originally molded in a converging inwardly tapered shape elastically enlarged to conform to said inner tubular member peripheral surface upon installing said throw-out bearing carrier over said inner tubular member.

4,585,108

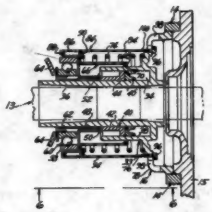
HYDRAULIC SLAVE CYLINDER FOR MOTOR VEHICLE CLUTCH CONTROL MECHANISM

Keith V. Leigh-Monstevens, Troy, Mich., assignor to Automotive Products plc, Warwickshire, England

Filed Mar. 21, 1983, Ser. No. 477,161

Int. Cl.[4] F16D *23/14, 25/08*

U.S. Cl. 192—85 CA **3 Claims**



1. A slave cylinder disposed concentric to a motor vehicle input shaft from a clutch mechanism to a gearbox, said slave cylinder comprising walls formed by a first tubular member disposed concentric to said shaft and a second tubular member spaced apart from said first tubular member and disposed concentric to said first tubular member, said first tubular member projecting beyond said second tubular member and said first and second tubular members being made integrally in a one-piece casting, a clutch throw-out bearing disposed peripherally around said first tubular member, an annular piston reciprocably disposed between the cylinder walls formed by said first and second tubular members, and a throw-out bearing carrier in the form of a sleeve slidably disposed around said first tubular member between said throw-out bearing and said piston, said sleeve having an end in engagement with said piston and another end forming a rim for mounting therein said throw-out bearing, an outwardly projecting radial lug formed integrally with said single piece casting, a fluid passageway through said lug leading into an annular chamber between said first and second tubular members, a restraining strap, said strap comprising an annular portion attached to said throw-out bearing outer race and a pair of strips extending longitudinally and formed integrally at one end with said annular portion, a strut integrally formed at another end of each of said strips, a slot in a portion of said one-piece casting for attachment therein of each said strut, and a portion of reduced strength on each of said strips, whereby each of the strips is ruptured at said portion of reduced strength upon first operation of said slave cylinder, wherein said passageway in said lug is connected to a master cylinder through a line, and said master cylinder, line and slave cylinder are prefilled with hydraulic fluid prior to installation on a motor vehicle.

4,585,109

MOTOR VEHICLE CLUTCH CONTROL MECHANISM

Graham J. Shirley, and Keith V. Leigh-Monstevens, both of Troy, Mich., assignors to Automotive Products plc, Warwickshire, England

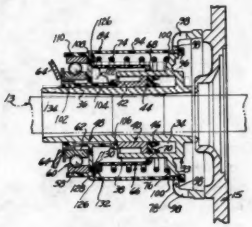
Filed Mar. 21, 1983, Ser. No. 477,162

Int. Cl.[4] F16D *23/14, 25/08*

U.S. Cl. 192—85 CA **8 Claims**

1. An apparatus for controllably operating a motor vehicle clutch, said apparatus comprising a hydraulic master cylinder, a hydraulic slave cylinder and a conduit interconnecting the

master cylinder and the slave cylinder, said hydraulic slave cylinder being disposed concentric to an input shaft from said motor vehicle clutch to a gearbox, said slave cylinder comprising a pair of spaced apart concentrically disposed inner and outer tubular members, the inner tubular member projecting beyond the outer tubular member, an annular piston disposed reciprocably between said inner tubular member and said outer tubular member, a throw-out bearing for actuating said clutch, said throw-out bearing having an inner race disposed around said inner tubular member and an outer race, a tubular throw-out bearing carrier slidably disposed around said inner tubular member and having an end in engagement with said piston and another end forming a rim in which is mounted the outer race of said throw-out bearing, biasing means constantly urging said throw-out bearing outwardly in a direction engaging the inner race of said throw-out bearing with a release mechanism for



said clutch, a shipping and installation strap comprising an annular portion attached to the outer race of said throw-out bearing and a pair of strips having each an end integrally formed with said annular portion attached to said throw-out bearing, said strips having each another end attached to said slave cylinder casing for preventing linear displacement of said throw-out bearing under the action of said biasing means, each of said strips having a portion of reduced strength such that upon first linear displacement actuation of said throw-out bearing by said slave cylinder each of said strips breaks at said portion of reduced strength, whereby said slave cylinder is free to operate normally, and a tubular dust cover longitudinally displaceable in unison with said throw-out bearing, said dust cover having a terminal flange portion in sliding engagement with the peripheral surface of said outer tubular member, wherein said portion of said strap attached to said throw-out bearing outer race is also attached to said dust cover.

4,585,110

TORSIONAL DAMPER STRUCTURE FOR A CLUTCH DISC USED IN A MOTOR-VEHICLE CLUTCH

Hilmar Göbel, Schwebenried, and Harald Raab, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,231

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 8215539[U]

Int. Cl.⁴ F16D *3/14*

U.S. Cl. 192—106.2 **6 Claims**

1. A clutch disc for a motor-vehicle clutch, comprising:

a hub (**1**) defining an axis of rotation (**1*a***),

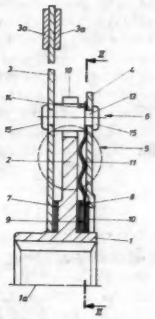
a hub disc (**2**) supported on said hub for rotation therewith and projecting substantially radially outwardly from said hub,

a friction lining carrier (**3**, **3*a***, **4**) mounted on said hub (**1**) so as to be rotatable through a limited angle of rotation relative to said hub, wherein said friction lining carrier comprises two side parts (**3**, **4**) being arranged on opposite sides of said hub disc and being connected together so that said side parts rotate together and being connected to said friction lining carrier,

several springs (**5**) beings provided in the rotational path between said side parts and said hub disc and being subjected to pressure if said friction lining carrier and said hub disc rotate relative to each other,

at least one friction ring (**7**, **8**) being arranged axially between said hub disc and one of said side parts and encircling said hub,

a pressure ring (**9**) being arranged axially between said at least one friction ring and said adjacent one of said side parts and encircling said hub, means for biasing said pressure ring in an axially resilient manner, and



several arms (**11**) spaced angularly apart around and projecting substantially radially outwardly from said pressure ring and having the radially outer ends thereof held on said friction lining carrier, said arms being stiff in the circumferential direction of said pressure ring, the improvement being characterized in that said arms are corrugated in the radial direction and, at their radially outer ends, are fastened to said adjacent side part in a play-free rigid manner.

4,585,111

COIN SLIDE MECHANISMS

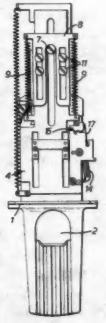
Kenneth R. Allen, Woodford Green, England, assignor to Essex Engineering Works (Wanstead) Ltd., Wanstead, England

Filed Nov. 16, 1984, Ser. No. 671,903

Claims priority, application United Kingdom, Nov. 29, 1983, 8331842

Int. Cl.⁴ G07F *5/02*

U.S. Cl. 194—257 **3 Claims**



1. A coin slide mechanism for controlling actuation of an apparatus, said mechanism comprising:

a mounting body;

a coin slide mounted for sliding movement along a rectilin-

ear path between a first, outer position and a second, inner position, said coin slide having a coin aperture to receive any single coin from a selected range of coins of different values said coin slide being manually displaceable from said first position to said second position to carry a coin present in said coin aperture past coin testing means for testing the value of said coins;

a secondary slide for actuating said apparatus and yieldingly coupled to said coin slide for movement therewith;

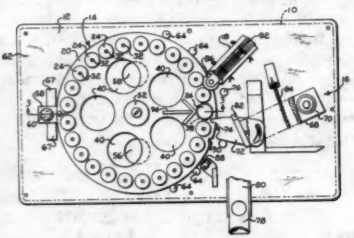
movable stop means operatively coupled to said coin testing means and displaceable thereby to one of a number of discrete operative positions each corresponding to the particular value of the coin in said coin aperture, said stop means co-operating with said secondary slide to arrest movement thereof at a position corresponding to the value of said coin, whereby said coin slide is manually displaceable from said first position to said second position regardless of the value of a coin present in said coin aperture and displacement of said secondary slide with said coin slide is arrested at a position corresponding to the value of said coin.

4,585,112

AUTOMATED FEEDING DEVICE

George C. Peeling, R.D. #5, Muncy, Pa. 17756, and Clyde R. Peeling, R.D. #1, Allenwood, Pa. 17810

Filed Jul. 6, 1984, Ser. No. 628,501
Int. Cl.[4] G07F *1/00*
U.S. Cl. 194—293 15 Claims



1. An automated feeding device for dispensing living insects to caged animals comprising,

a support frame means adapted for detachable connection to an animal cage with an access opening for supporting a removable cassette assembly for dispensing live insects into the cage,

a removeable cassette assembly having,

a bottom plate with an annular portion having a smooth upper surface and a dispensing aperture therethrough,

a top plate with an annular array of individual cells for holding live insects, each cell being adapted to hold a live insect and having a smooth interior surface devoid of insect-grippable protrusions and an access opening adapted for alignment with the dispensing aperture of said bottom plate to dispense the insect contained within said cell through said dispensing aperture,

said top plate being detachably connected and rotatably mounted to said bottom plate for successive alginment of the individual access openings of the cells with said dispensing aperture, said top plate being in mating engagement with said bottom plate so that said smooth upper surface of said bottom plate closes off the abutting access openings of said cells to maintain the insects within said cells and tightly engages said top plate to restrain an insect within a cell from being jammed between said top and bottom plate as said top plate is advanced relative to said bottom plate,

said cassette assembly being removably mounted to said support frame means to permit selective replacement of said cassette assembly, said cassette assembly being mounted to said support frame means so that said dispensing aperture of said bottom plate is aligned with said access opening of the cage,

means for aligning the access opening of an individual cell with said dispensing aperture of said bottom plate and for selectively advancing said top plate to successively align the access opening of the next adjacent cell with said dispensing aperture,

each said cell having a predetermined exterior configuration so that said array of cells forms a gear wheel with said aligning and advancing means having means operationally complementing said gear wheel for rotating said top plate, and

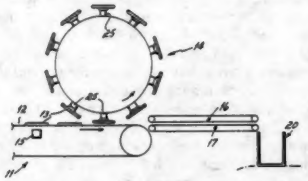
manually actuable means for actuating said aligning and advancing means.

4,585,113

APPARATUS FOR TRANSFERRING ARTICLES

Joseph D. Greenwell, Florence, Ky., assignor to R. A. Jones & Co. Inc., Covington, Ky.

Continuation-in-part of Ser. No. 538,769, Oct. 5, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,168
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—347 12 Claims



1. Apparatus for transferring articles from a single file conveyor having uniformly spaced positions for articles to groups of at least two articles and to create batches of articles of a predetermined number with preselected spacing between batches whether or not the single file of articles has an article in each of the spaced positions, comprising:

a first conveyor for conveying articles in longitudinally-spaced file positions,

a diverter for temporarily removing from said single file as many articles as are necessary to create the preselected spacing between batches,

said diverter returning said articles to said first conveyor and depositing them onto or adjacent to undiverted articles which are carried on said first conveyor,

an article counter to count the number of articles passing single file upstream of said diverter, said article counter triggering the operation of said diverter after a predetermined batch of articles has been counted,

a cycle counter for counting a preselected number of said single file positions,

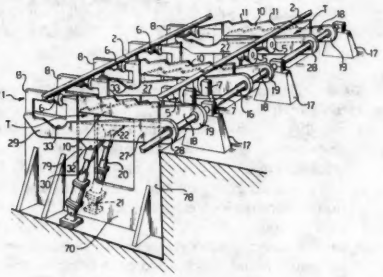
means associated with said cycle counter for terminating the diverting actions of said diverter after a preselected number of diverting actions has been completed, thereby creating the preselected spacing between batches,

whereby the article counter assures that there is a desired number in each batch and thereupon triggers the operation of said diverter, and whereby said cycle counter, controlling the number of diverter actions, assures that there is a preselected number of empty article positions between batches.

4,585,114
APPARATUS FOR THE LATERAL TRANSFER OF MANDRELS IN A TUBE ROLLING MILL

Bassi Liliano, Milan, Italy, assignor to Innse-Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Oct. 15, 1984, Ser. No. 661,296
Claims priority, application Italy, Oct. 28, 1983, 23521 A/83
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—570 4 Claims



1. Appparatus for the lateral transfer of mandrels in a tube rolling mill, particularly for the transfer of mandrels from a lube conveyor to an adjacent, parallel pre-insertion line, further including at least two transfer devices, characterised in that each of the transfer devices comprises:

fixed arm (10) extending transversely between the lube conveyor (3) and the pre-insertion line (4) and having an upper substantially saw-tooth profile (11) with the front (12) facing the lube conveyor (3), a first tooth (11*a*) having its front (12*a*) preceded by a back (14) extending close to the lube conveyor (3) at a level above the upper profile thereof, the final tooth (11*b*) having its back (13*b*) descending towards the pre-insertion line (4) and terminating near it,

a first arm (18) movable in a vertical plane perpendicular to the lube conveyor (3) and the pre-insertion line (4), which arm (18) extends between the conveyor (3) and the line (4) and has one end outside the lube conveyor (3),

the first movable arm (18) having an upper saw-tooth profile (23) substantially the same as that of the fixed arm (10) but staggered relative thereto towards the lube conveyor (3), a first tooth (23*a*) having a front (24*a*) preceded by a back (26) extending across the lube conveyor (3),

drive means (20) connected to said first movable arm for moving said first movable arm (18) between first and second positions in which the respective teeth (23) have their backs (24) at a lower level and an upper level respectively compared to the backs (13) of the teeth (11) of the fixed arm (10),

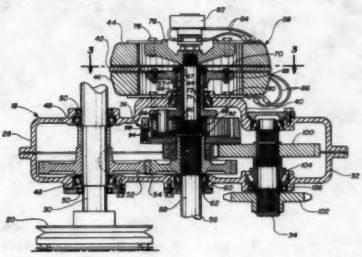
a second arm (27) movable in a vertical plane perpendicular to the lube conveyor (3) and the pre-insertion line (4), which arm (27) extends between the conveyor (3) and the line (4) and has an upper straight profile and one end (28) outside the lube conveyor (3),

drive means (30) connected to said second movable arm for moving said second movable arm (27) between first and second positions in which the upper straight profile thereof is respectively entirely beneath and above the teeth (11) of the fixed arm (10), in both positions the straight profile of the second movable arm (27) being inclined downwardly and towards the pre-insertion line (4).

4,585,115
ELECTRIC CLUTCH BRAKE APPARATUS

Curtis H. Lindblom, and Wayne B. Martenas, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Continuation of Ser. No. 349,435, Feb. 16, 1982, abandoned.
This application Sep. 4, 1984, Ser. No. 646,986
Int. Cl.[4] B65G *29/00*; A01D *69/06*; F16D *11/00*; F16H *57/10*
U.S. Cl. 198—624 7 Claims



1. A forage harvester comprising:

a mobile frame;

a power takeoff shaft connected to said frame;

a main gearbox connected to said power takeoff shaft;

a pair of feed rolls rotatably supported by said frame and driveable in forward and reverse directions;

a reversing gearbox having a housing supported on said frame and connected to said feed rolls and said main gearbox, said reversing gearbox being operable to drive said feed rolls in both said forward and reverse directions, said reversing gearbox including a planetary gear set having a sun gear mounted on a jack shaft for rotation therewith, a planet gear supported by a carrier for rotation independently of said jack shaft about said sun gear in intermeshing engagement therewith, and a ring gear intermeshed with said planet gear and supported on said jack shaft for rotation independently thereof, said jack shaft and said carrier extending outwardly of said reversing gearbox housing; and

an electric clutch-brake apparatus supported on the portion of said jack shaft extending outwardly from said housing for operative association with said planetary gear set to effect an operation of said planetary gear set for selectively causing a driving of said feed rolls in said forward and reverse directions, said electric clutch-brake apparatus including an electrically actuated brake magnet detachably connected to said reversing gearbox housing, an electrically actuated clutch magnet detachably connected to said outward portion of said jack shaft for rotation therewith in spaced relationship to said brake magnet, and an armature detachably connected to said carrier for rotation therewith between said brake magnet and said clutch magnet in spaced relationship thereto, said armature being selectably attracted to said brake and clutch magnets upon electrical actuation thereof.

4,585,116
SLUDGE COLLECTOR FLIGHT, WEAR SHOE AND GUIDE LUG ASSEMBLY

Charles J. Albrecht, Taylors, S.C., assignor to Dresser Industries, Inc., Dallas, Tex.

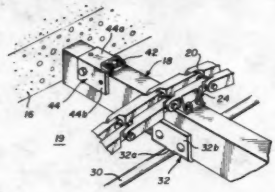
Filed Feb. 11, 1985, Ser. No. 700,429
Int. Cl.[4] B65G *19/00*
U.S. Cl. 198—729 5 Claims

1. An improved wear shoe and guide lug assembly for use in a sludge collecting system having a collection flight, stationary support rail means, and wherein said wear shoe and guide lug assembly is attached to said flight fofr supporting and guiding

said flight on said support rail means wherein said improvement comprises:

a wear shoe having a pair of generally mutually perpendicular leg portions, each portion having coplanar edges, said leg portions defining an inner surface for facing engagement with said collection flight and an outer surface, with the outer surface of each leg portion comprising a substantially planar surface;

a guide lug removably assembled to said wear shoe and disposed thereon adjacent one edge of said wear shoe and



engaging the outer planar surface of one leg portion thereof and defining an outwardly projecting guide shoulder generally perpendicular to said wear shoe outer surface, and an inwardly extending lip defining a plane generally parallel to the plane of said shoulder and engaging said one edge of said wear shoe for alignment of said shoulder with said wear shoe; and

aligned apertures in said shoe, guide lug and flight for receipt of attachment means for releasably attaching said shoe, lug and flight together.

4,585,117

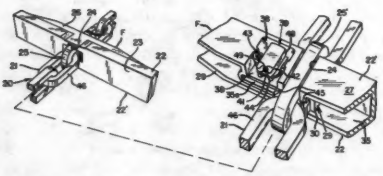
FLIGHT FOR LINK CHAIN CONVEYOR

Frederick C. Hahn, Aloha, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed May 24, 1984, Ser. No. 613,889

Int. Cl.[4] B65G *19/24*

U.S. Cl. 198—731 **2 Claims**



1. A chain-flight construction comprising an elongated chain having a plurality of identical, generally oval, interconnected links, a flight including a unitary elongated body having top and bottom sides and front and rear faces, a notch in said body extending from the front to the rear face and being open to one of said top and bottom sides for the receipt of one of said links, one of said links being positioned in said notch, said body being equipped with transverse walls defining the sides of said notch, openings in said notch side walls for the mounting of a lock to releasably maintain a link in said notch, a cavity in said body adjacent each notch side wall and a headed locking member extending through said notch sidewall openings from one cavity to the other with the head of the locking member being in one cavity and the member extending into the other cavity and passing through the notch-positioned link, and temporary locking means in the other cavity on the end of said locking member opposite to the head end.

4,585,118

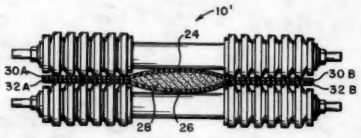
SELF-TRACKING BELT ROLLER

Werner P. B. Plaut, 350B Heritage Hills, Somers, N.Y. 10589

Filed Feb. 13, 1984, Ser. No. 579,307

Int. Cl.[4] B65G *39/04*

U.S. Cl. 198—840 **24 Claims**



10. A self-tracking belt and roller system comprising:

rotable shaft means;

a plurality of first and second self-tracking rollers on said shaft means, each roller having a plurality of alternating tracking rings and spacer rings arranged in a first group and a second group on said shaft means and a space portion centrally located between said first and second groups; and

a pair of endless conveyer belts sandwiched between said first and second rollers, said belts being securely gripped by said first and second groups of tracking rings;

wherein said space portion permits a pair of dual belts to form a sandwich for conveying solid material therein; and

wherein said groups of alternating tracking and spacer rings urge the pair of dual belts towards the center of the self-tracking belt roller and also provide a constant center directed force on the edges of the dual belts to urge the solid material into said space portion.

4,585,119

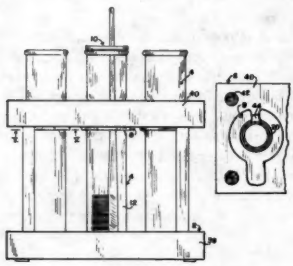
TOOTHBRUSH SANITIZER DEVICES

Richard Boyington, 386 13th Ave., Vero Beach, Fla. 32960

Filed Jan. 9, 1985, Ser. No. 690,108

Int. Cl.[4] B65D *85/20*

U.S. Cl. 206—209.1 **6 Claims**



1. A device to sanitize and clean toothbrushes while storing them between brushing use comprising:

an elongated, tubular container having a necked-down section positioned between its lower, closed end and the upper, open end,

the lumen of said container being larger than the width of the bristled portion of toothbrushes to be stored therein while the lumen of said necked-down section is slightly less than said width so that bristles of a toothbrush are gently flexed when it is inserted into or withdrawn from said container,

a holder for said container having a transverse bore therein slightly larger in diameter than the OD of said container, and

retainer means that utilizes said necked-down section to enable said container to be locked in said holder including:

a ring of plastic material having an OD larger than said bore,

an integral, lateral tab handle and a slot in said ring opposed to said handle.

5. A device to sanitize and clean toothbrushes while storing them between brushing use comprising:

an elongated, tubular container having a necked-down section positioned between its lower, closed end and the upper, open end,

the lumen of said container being larger than the width of the bristled portion of toothbrushes to be stored therein while the lumen of said necked-down section is slightly less than said width so that bristles of a toothbrush are gently flexed when it is inserted into or withdrawn from said container,

a holder for said container having a shelf containing a transverse bore therein slightly larger in diameter than the OD of said container,

retainer means that utilizes said necked-down section to lock said container in said holder comprising a flexible ring member having central hole therein having a diameter less than the OD of said container and greater than the OD of said necked-down section,

said ring member being fixed to said shelf concentric with said bore.

4,585,120

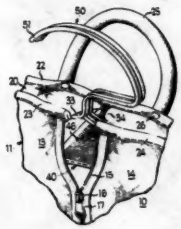
GARMENT BAG CLOSURE

Max L. Jaffe, 1240 N. Homan Ave., Chicago, Ill. 60651

Continuation-in-part of Ser. No. 521,270, Aug. 8, 1983, abandoned. This application Aug. 6, 1984, Ser. No. 638,282

Int. Cl.⁴ B65D *85/18*

U.S. Cl. 206—279 **9 Claims**



1. A garment bag comprising a front panel and a rear panel connected at the peripheries thereof, a gusset extending transversely between and connecting said front and rear panels at the tops thereof, said gusset having two end edges extending generally perpendicularly to the front and rear panels, first fastening material along substantially the entire length of said gusset end edges on the inside facing surfaces thereof, and a flap attached to said rear panel extending toward said front panel having second fastening material on the surface thereof facing said gusset in registry with said first fastening material along substantially the entire length of said gusset end edges, said gusset and said first fastening material theron cooperating with said flap and said second fastening material thereon to trap and retain hangers inside said bag with the hanger hooks extending outside said bag and to seal said bag against dust and the like when said first and second fastening material is connected therealong.

4,585,121

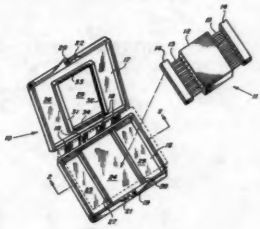
CONTAINER FOR MULTICHIP HYBRID PACKAGE

Ernest A. Capelle, Jr., Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1985, Ser. No. 747,601

Int. Cl.⁴ B65D *73/02*

U.S. Cl. 206—331 **2 Claims**



1. A container for all sizes of multichip hybrid packages, each package including a rectangular casing with rows of leads extending from either end, said container comprising:

a rectangular receptacle having a pair of transverse dividers forming three compartments along the length thereof, the center compartment being formed to receive all sizes of rectangular casings and the end compartments being formed to receive the leads;

a cover coextensive with said receptacle having an aperture coextensive with said center compartment for fully exposing the rectangular casing, said cover including ledges at either end of said aperture aligned with said dividers for clamping the leads in place therebetween and thereby securing the package; and

said receptacle and cover being constructed of an electrically conductive carbon plastic with additives for strength and temperature resistance.

4,585,122

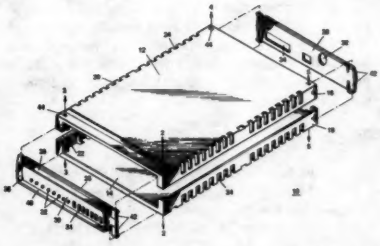
SECURE HOUSING ARRANGEMENT FOR ELECTRONIC APPARATUS

Jerry A. Stegenga, Coral Gables, Fla., assignor to Racal Data Communications, Inc., Miami, Fla.

Filed Jan. 28, 1985, Ser. No. 695,666

Int. Cl.⁴ B65D *73/02*

U.S. Cl. 206—334 **13 Claims**



1. A secure housing arrangement, comprising:

upper and lower enclosure members each having an inner and an outer surface, a first end and an aperture adjacent said first end;

upper and lower latch receiving means, one coupled to each of said upper and lower enclosure members respectively, each latch receiving means situated adjacent said inner surface and adjacent said aperture;

a first end member, having upper and lower latching means suitable for engaging said upper and lower latch receiving means respectively in a manner which permits disengagement of said latching means by accessing said latching means through said apertures with a suitably small tool; and,

wherein each of said apertures are suitably dimensioned to discourage access to said latching means with human fingers.

4,585,123

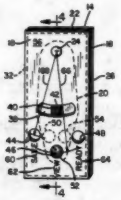
STATUS-DISPLAYING DEVICE FOR VIDEO TAPE STORAGE JACKETS

Verlyn M. Penry, Rte. 2, Box 2446, Hermiston, Oreg. 97838

Filed Aug. 2, 1985, Ser. No. 761,962

Int. Cl.[4] B65D *85/672*

U.S. Cl. 206—387 **20 Claims**



1. A status indicator for attachment to a jacket for a video tape cassette, comprising:

(a) a mask defining at least two status display openings extending therethrough, said status display openings being arranged in a predetermined pattern on said mask, and said mask further defining a grip aperture extending therethrough;

(b) an indicator member mounted behind said mask for movement with respect thereto, a front side of said indicator member having a first color and including at least two status-indicating areas located thereon at respective predetermined locations, the respective color of each status-indicating area differing from said first color; and

(c) grip means located on said indicator member for moving said indicator member pivotably with respect to said mask, said grip means being exposed through said grip aperture, and the locations of said status-indicating areas and said status display openings being so interrelated that for each status display area there is a position of said indicator member relative to said mask wherein at least a portion of the respective statusindicating area is visible through a respective corresponding status display opening, with no other part of any other status-indicating area being simultaneously visible through any other one of said status display openings.

4,585,124

FOOD CONTAINER AND INSERT

Peter Pride, Hunters Hill, Australia, assignor to Gaichime Pty. Limited, Mississauga, Canada

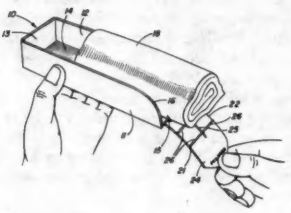
Filed May 31, 1984, Ser. No. 615,803

Int. Cl.[4] B65D *75/58*

U.S. Cl. 206—559 **3 Claims**

1. An insert for a food container in the form of a box having an open end, said insert comprising a bendable elongated sheet of flexible material of such dimensions that it may be placed flat on the base of the container; a pull tab at one end of the insert which is accessible at and extends from said open end of the container; the insert having frictional retention means on an upper surface of the sheet to be engaged by an item of food in the container so that when the insert is withdrawn from the container by pulling on the tab, the food item will be withdrawn along with the insert;

where said frictional retention means comprises a plurality of transverse ridges projecting upwardly from the upper surface of the sheet, and a longitudinal groove which is



concave with respect to the upper surface of the sheet, for resisting longitudinal bending of the insert when positioning the insert in a container;

whereby the insert may be bent in a curved shape as it is withdrawn from the container by being pulled on the pull tab.

4,585,125

BILL DISCRIMINATOR

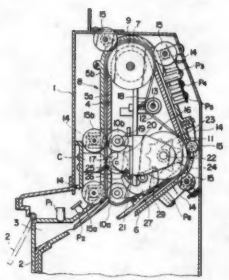
Yoshikazu Mori; Susumu Kojima, and Masayuki Watabe, all of Tokyo, Japan, assignors to Kabushiki Kaisha Nipponcoinco, Tokyo, Japan

Filed Apr. 23, 1985, Ser. No. 726,128

Claims priority, application Japan, Jun. 15, 1984, 59-88108[U]

Int. Cl.[4] B07C *5/00*

U.S. Cl. 209—534 **1 Claim**

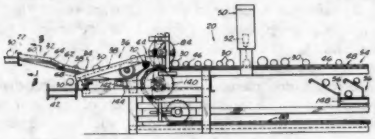


1. A bill discriminator including within a housing a bill conveying mechanism which comprises a bill conveying path, a driving pulley, a driven pulley and a conveyor belt and which is rotatable in both forward and reverse directions for conveyance of a bill within said bill conveying path, and bill discriminating magnetic head and photo sensors disposed in said bill conveying path, characterized by further including a tiltable lever having a pressing roller which is brought into pressure contact with said magnetic head by a biasing force of a spring, a latch gear integral with the driven pulley of said bill conveying mechanism, and a rocking lever which is normally in pressure contact with the outer periphery of said latch gear and which, at the time of reverse rotation of said bill conveying mechanism, imparts a tilting action to said tiltable lever against the spring to let the pressing roller depart from said magnetic head.

4,585,126
METHOD AND APPARATUS FOR HIGH SPEED PROCESSING OF FRUIT OR THE LIKE

Paul F. Paddock, Riverside, and Everett G. LaVars, Pomona, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Oct. 28, 1983, Ser. No. 546,274
Int. Cl.⁴ B07C 5/02, 5/342
U.S. Cl. 209—539 **33 Claims**



1. Apparatus for high-speed processing of fruit or the like, comprising

alignment means for accumulating and aligning a continuous supply of fruit at a pick-up point,

a singulation conveyor including continuous conveyor means for movement past said pick-up point, said continuous conveyor means including spaced-apart pockets for receiving individual units of the fruit at the pick-up point, maintaining the fruit in predetermined linear spacing and accelerating the fruit to a predetermined processing speed,

a processing conveyor formed with an endless array of trays for receiving the individual units of fruit from the singulation conveyor, the processing conveyor including means for synchronizing its speed relative to the singulation conveyor for assuring that individual units of fruit from the pockets in the singulation conveyor are transferred to respective trays in said processing conveyor, and

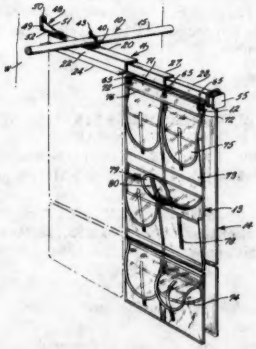
discharge means associated with said processing conveyor,

wherein the alignment means comprises a first ramp inclined downwardly toward said pick-up point, an additional ramp interconnecting with said first ramp at a point upstream of said pick-up point and means for supplying fruit to both said first ramp and said additional ramp in order to further assure a continuous alignment of fruit in said first ramp adjacent said pick-up point.

4,585,127
EXTENDABLE CLOSET ORGANIZERS

Charles E. Benedict, Tallahassee, Fla., assignor to Benedict Engineering Co., Inc., Tallahassee, Fla.

Filed Sep. 25, 1984, Ser. No. 654,341
Int. Cl.⁴ A47F 7/08
U.S. Cl. 211—34 **2 Claims**

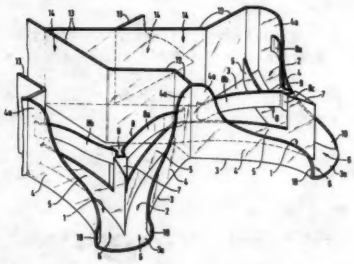


1. An apparatus for suspending articles of clothing from a clothes rod in a closet comprising an extendable support means, said extendable support means having a first mounting means for securing said support means to the clothes rod, said extendable support means having an outer housing and at least one telescoping member extendably carried therein and being slidable with respect thereto, a hanger means carried by said telescoping member so as to be longitudinally moveable with respect to said housing, said hanger means including an elongated rod portion having upwardly extending mounting portions at each end thereof which are engageable with said telescoping member of said support means, said elongated rod portion having a first number of pairs of spaced oppositely oriented hook means extending therefrom, a pair of oppositely oriented garment storage means, each of said garment storage means having a number of spaced engaging means equal to said first number of pairs of said hook means which are selectively engaged by said hook means so that said garment storage means are selectively suspended therefrom in a balanced relationship on opposite sides of said elongated rod portion of said hanger means, each said garment storage means having a plurality of pockets on a first side thereof for receiving articles of clothing therein, said first side of said garment storage means being oppositely oriented with respect to one another when mounted to said hook means, whereby said garment storage means are longitudinally moveable with respect to the clothes support rod by urging said telescoping menber of said extendable support means outwardly with respect thereto.

4,585,128
ARTICLE DISPLAY STAND

Wolf-Dietrich Hannecke, Rischenau Weg 6, 3410 Northeim, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 521,738
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 8225277[U]
Int. Cl.⁴ A47F 7/00
U.S. Cl. 211—51 **25 Claims**



1. An article display stand, particularly for sheet-like data carriers, comprising a substantially horizontal bottom plate having an outer edge; and at least two pairs of substantially vertical lateral walls arranged on said bottom plate and forming at least two upwardly open elongated compartments for accomodating objects in an upright position, each of said compartments having an object withdrawing opening formed in the region of said outer edge of said bottom plate, said lateral walls of each of said compartments extending at a substantially uniform distance from one another, the lateral walls of one of said compartments approaching the lateral walls of the other of said compartments and therefore said compartments approaching one another in direction toward the respective withdrawing openings so that said compartments form an angle therebetween, and said withdrawing openings of said two compartments being located near one another.

4,585,129

DIAGONALLY STIFFENED STRUCTURE AND METHOD OF FORMING SAME

Harald Lundqvist, Chemin des Cuarroz 21, CH-1807 Blonay, Switzerland

PCT No. PCT/SE83/00238, § 371 Date Feb. 21, 1984, § 102(e) Date Feb. 21, 1984, PCT Pub. No. WO84/00288, PCT Pub. Date Feb. 2, 1984

PCT Filed Jun. 9, 1983, Ser. No. 589,074

Claims priority, application Sweden, Jul. 14, 1982, 8204319

Int. Cl.[4] A47B *47/00*; A47F *43/00, 57/00*; B21D *39/00*

U.S. Cl. 211—189 **4 Claims**

1. A method for stiffening and stressing a rigid rectangular frame structure diagonally by means of two mutually intersecting wire-like or rod-like stays which are attached to the structure at four attachment locations, characterized by displacing the intersection point of said stays that are attached at said four attachment locations in the transverse directions of respective stays, while at the same time holding the structure fixed in its intended position until both stays are under the same, desired amount of tension, and then firmly connecting the stays together at said displaced point of intersection, by spot-welding said stays at said location or by screwing or riveting said stays together with the aid of a suitable fitting.

2. A stiffened and stressed rigid rectangular frame structure formed by the method according to claim 1.

4,585,130

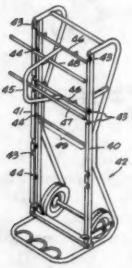
U-CHANNEL STORAGE SYSTEM

Mark S. Brennan, P.O. Box 70562, Pasadena, Calif. 91107

Filed Sep. 11, 1984, Ser. No. 649,520

Int. Cl.[4] A47B *47/00*

U.S. Cl. 211—190 **4 Claims**



1. A wire reel storage system comprising:

a discrete pair of opposed U-shaped metal channels, each U-shaped channel having a channel base, front and rear channel legs and being of equal length, said pair of U-shaped channels having their channel bases outwardly disposed and secured on support means, said pair of U-shaped channels having multiple open slots formed in the front channel legs at oppositely corresponding positions, and disposed at selected equally spaced distances apart on each channel.

multiple supporting stops securely disposed at selected distances below each slot in said U-shaped channels, each stop being located at oppositely corresponding positions in said U-shaped channels to provide a plurality of support means,

at least one rod shaft means disposed between a pair oppositely corresponding slots in said U-shaped channels, said rod shaft means disposed on said paired supporting stops thereby providing support for at least one or more reels of wire and cable conduit,

and

a wire reel caddy means having a pair of rod feet disposed parallel to said rod shaft means, each of said pair of rod feet having selected lengths and parallel spacing adapting them to engage said multiple oppositely corresponding slots and stops of said opposed U-shaped channels.

4,585,131

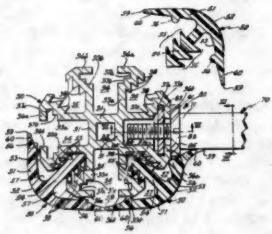
VARIABLE DECOR MERCHANDISING SYSTEM

Philip E. Crossman, Grand Rapids; Douglas D. Amstutz, and Donald D. Kelemen, both of Muskegon, all of Mich., assignors to Amstore Corporation, Muskegon, Mich.

Filed Dec. 19, 1983, Ser. No. 563,063

Int. Cl.[4] A47F *5/00*

U.S. Cl. 211—206 **29 Claims**



1. A modular support system comprising:

an upright member;

a plurality of elongated decor strips each including first and second flexible, margin portions terminating in first and second edges, respectively, said edges extending longitudinally of said strips, said decor strips being mounted on said upright member with each of said edges proximate an edge of another decor strip to hide said upright member, whereby a lateral member extending between a pair of proximate edges and secured to said upright member causes the margin portions associated with the pair of proximate edges to flex to receive the lateral member and to hide the connection of said upright member and the lateral member.

4,585,132

EXTENSIBLE BOOM WITH MANUAL SECTION STORED IN BASE

Robert A. Rathe, Cedar Rapids, and Thomas M. Volkman, Hiawatha, both of Iowa, assignors to FMC Corporation, Chicago, Ill.

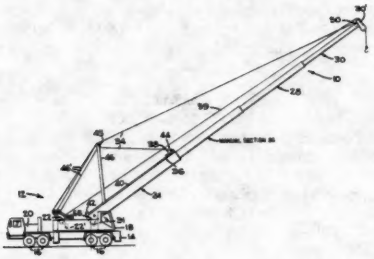
Division of Ser. No. 648,619, Sep. 10, 1984, Pat. No. 4,514,939, which is a continuation of Ser. No. 293,728, Aug. 17, 1981, abandoned. This application Dec. 24, 1984, Ser. No. 685,567

Int. Cl.[4] B66C *23/04*

U.S. Cl. 212—268 **2 Claims**

1. A method of improving the load carrying capacity of a multi-section telescopic boom that progressively includes from inner end to outer end a base section supported for pivotal movement about a horizontal axis, a manual section, a mid-sec-

tion, and a tip section including head machinery adapted to carry a load; which sections are progressively lighter toward the outer end of the boom when the weight of said head machinery is excluded; said boom sections being extended and retracted by a single hydraulic ram including a cylinder connected to said mid-section and a piston aided by an extend-retract cable, the cable being trained around sheaves on the outer end of the cylinder and on the inner end of the mid-section and having end portions connected to the inner and outer ends of said manual section and an intermediate portion connected to the inner end of said tip section; said method including the steps of extending the manual section, the mid-section



and the tip section only when full boom length is required to reach and carry the load; and storing the heavy manual section in the base section leaving the lighter mid and tip sections extended when extension of the mid and tip sections is sufficient to reach and carry the load; said method additionally comprising the steps of selectively attaching said piston to said base section for extending and retracting said manual section relative to said base section, locking said manual section in selected position, releasing the piston rod from said base section, and reconnecting said piston to said manual section for selectively extending and retracting said mid and tip sections relative to said base and manual sections.

4,585,133

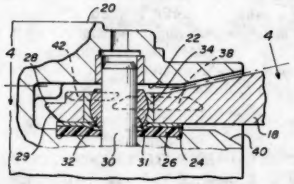
COUPLER FOR CONVERTIBLE RAIL-HIGHWAY SEMI-TRAILER

Geoffrey W. Cope, Williamsville, N.Y., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 12, 1984, Ser. No. 600,276

Int. Cl.[4] B61G *1/28;* B60D *1/00*

U.S. Cl. 213—206 **4 Claims**



1. In a vehicle convertible from highway to railroad mode of travel and vice versa including means to releasably couple adjacent vehicles end-to-end to form a train for the railroad mode, said coupling means including a male member extending from the end of one of the vehicles, and a housing attached to the opposed end of the other of said vehicles and having an opening therethrough for receiving the male member of said one vehicle, means for releasably locking said male member in said opening, wherein the improvement comprises:

said housing opening having a ramp-like surface formed on the bottom wall thereof;

said male member comprising a nose portion including a lifting surface having a complementary configuration to said ramp-like surface, with movement of said lifting surface into engagement with said ramp-like surface resulting in vertical upward movement of said male member in said opening;

a resilient pad positioned in the opening of said housing for supporting said male member;

inwardly extending guide surfaces formed on the opposed side walls of said housing opening; and

said male member including guide lugs extending outward from the side of said nose portion for cooperative interengagement with said guide surfaces for guiding said male member in said housing opening including lifting said member above the upper surface of said pad to prevent the member from contacting said pad during its inward and outward movement relative to said housing opening.

4,585,134

PORTABLE CONTAINER

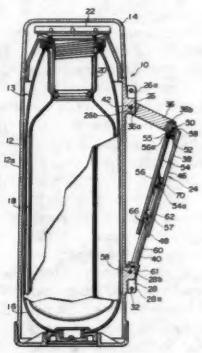
Kenichi Miyaji; Shouji Toida; Seiichi Ito, and Isao Watanabe, all of Yoshidamachi, Japan, assignors to Nippon Sanso Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1984, Ser. No. 681,115

Claims priority, application Japan, Dec. 21, 1983, 58-196862[U]

Int. Cl.[4] B65D *23/10*

U.S. Cl. 215—100 A **20 Claims**



1. A portable container comprising:

(a) a body having a peripheral side wall; and

(b) a collapsible handgrip mounted on the outer surface of said side wall, said handgrip comprising a link pivotally mounted on said side wall at one end thereof, and an elongated guide member pivotally mounted on said side wall at one end thereof disposed at a level below said one end of said link, and an elongated slide member hingedly connected to the other end of said link at one end thereof and engaging said guide member for sliding movement therealong;

one of said slide member and said guide member having engaging means, the other having a pair of first and second retaining means spaced along the length thereof, said engaging means being engageable with said first retaining means when said handgrip is in its contracted position, thereby holding said slide member against movement relative to said guide member, said engaging means being engageable with said second retaining means when said handgrip is in its expanded position, thereby holding said slide member against movement relative to said guide member;

said engaging means being resiliently engageable with said first and said second retaining means; and

said handgrip being moveable between a contracted position wherein the hinged ends of said link and said guide member are disposed adjacent to said side wall of said body and an expanded position wherein said hinged ends are spaced away from said side wall.

4,585,135

SCREW CLOSURE

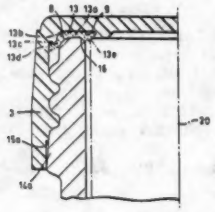
Kenneth M. Sinnott, Huntingdon, England, assignor to W. R. Grace & Co., Lexington, Mass.

Continuation of Ser. No. 607,072, May 4, 1984, abandoned, which is a continuation of Ser. No. 469,616, Feb. 25, 1983, abandoned. This application Feb. 27, 1985, Ser. No. 706,537

Claims priority, application United Kingdom, Mar. 10, 1982, 8206980

Int. Cl.⁴ B65D *53/00*

U.S. Cl. 215—329 **3 Claims**



1. A closure for a container comprising a molded cap comprising a first plastics material, said cap having an end panel and a skirt downwardly depending from the end panel, the skirt having a radially inwardly facing surface stepped to define a first and a second inner surface portion of which the second inner surface portion is further from the end panel, and the first inner surface portion has a diameter smaller than the second inner surface portion, the skirt being internally threaded for engagement with external threading on a neck of the container the internal threads of the skirt being separated from the first and second inner surface portions and the end panel by a substantially planar surface; and a gasket formed in situ on the end panel near its junction with the skirt, the gasket comprising a second plastics material which is softer than the first plastics material, said gasket extending over the first inner surface portion and at least a part of the second inner surface portion such that when the closure is driven downwardly onto the neck of the container a side seal is formed.

4,585,136

ATTACHMENT OF RINGS TO ARTICLES

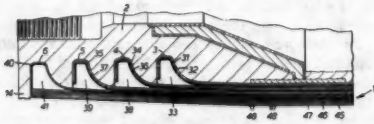
John Clark, Cheddar, England, assignor to BAJ Vickers Limited, England

Filed Dec. 15, 1982, Ser. No. 450,061

Claims priority, application United Kingdom, Dec. 16, 1981, 8137666

Int. Cl.⁴ B32B *1/02, 1/08*

U.S. Cl. 220—3 **13 Claims**



1. A vessel having a ring component, a fibre-reinforced resin wall forming a body of revolution and having an opening at one end centered on the axis of generation of the body, the opening being bounded by the ring component, a plurality of external circumferential recessed grooves in the ring component, each groove having one wall facing toward said body and a second wall facing away from said body, said wall externally overlapping said ring component and comprising a plurality of layers, a layer for each successive groove starting with the groove nearest to the body, each layer extending into its groove and being seated against and bonded to both walls of its groove and being terminated adjacent the radial outer edge of the second wall of the groove, the layer including fibres having a substantial orientation in directions which are generally axial of the vessel, a separate hoop winding of resin-impregnated fiber material overlaying each layer and hoop wound into the groove to lock each of the said layers into its respective groove, all of said fibers and layers of fibers being bonded together by resin material.

4,585,137

BOTTLE HAMPER

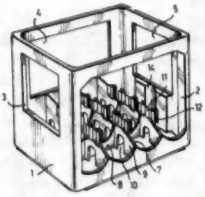
Kari Poutiainen, Nastola, and Timo Taina, Kausala, both of Finland, assignors to Asko Oy, Nastola, Finland

Filed Mar. 27, 1984, Ser. No. 593,925

Claims priority, application Finland, Mar. 31, 1983, 831114

Int. Cl.⁴ B65D *25/04, 1/24*

U.S. Cl. 220—21 **3 Claims**



1. A bottle hamper comprising

a frame defining a plurality of sides, at least one side having an opening of a size sufficient for removal of a bottle therethrough;

a bottom;

a framework on said bottom below said opening to define compartments for a plurality of bottles within said frame to separate the bottles from each other, said framework having a plurality of parallel partitions perpendicular to said one side;

a plurality of vertical tongues extending upwardly frm each said partition; and

a plurality of V-shaped supporting devices, each said device being flexibly secured to one vertical edge of a respective tongue and projecting into each of two adjacent compartments to retain a bottle in each adjacent compartment wherein each supporting device defines a pair of inflexible arms, each arm projecting horizontally into an adjacent compartment and extending horizontally towards said opening in said one side.

4,585,138

CONTAINER WITH LOCKING COVER

Godefridus H. J. Jonkers, Helmond, Netherlands, assignor to Wiva Verpakkingen B.V., Netherlands

Filed Jul. 1, 1985, Ser. No. 750,520

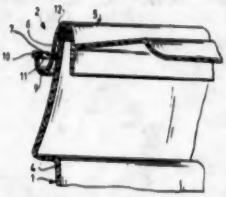
Claims priority, application Netherlands, Jul. 2, 1984, 8402103

Int. Cl.⁴ B65D *6/34, 8/04, 8/06*

U.S. Cl. 220—67 **28 Claims**

1. Container, particularly for the storage of sensitive products, for example contaminated waste such as hospital refuse, the container having a base and joining thereupon standing wall members, whereby the open top bordered by the upper

edges of the wall members can be closed by a cover, whose edge member is carried by the upper edges of the standing wall members, characterized in that the edge member of the cover displays a groove or channel for accomodating the upper edge



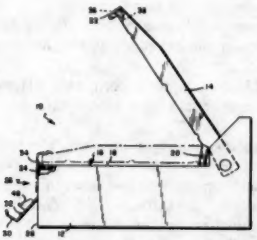
of the wall members (4), or vice-versa, whereby the edge member and upper edge are provided with integral means of locking (9-11) for permanently closing cover (5) and container (1) together, and that a means of sealing (7, 12, 13, 17) is fitted in channel (6).

4,585,139

COOPERATING COVER MECHANISMS

Bruce A. Bronson, Anaheim, and Anatoly Vanetik, Fullerton, both of Calif., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 8, 1985, Ser. No. 763,491
Int. Cl.[4] B65D 79/00
U.S. Cl. 220—256 4 Claims



1. An enclosure comprising:

A. a housing generally defining a housing interior, including first and second substantially adjoining walls having first and second substantially adjoining apertures, respectively, opening into the housing interior;

B. a catch on the housing;

C. a first cover having pivot and free ends, the cover being pivotably mounted on the housing for pivoting, about a first pivot axis at its pivot end, between a fully closed position, in which it closes the first aperture, and an open position, in which it permits access to the housing interior through the first aperture, the first cover being biased toward its open position;

D. a latch pivotably mounted on the first cover, the latch being biased toward an engagement position in which, when the first cover is in its fully closed position, the latch engages the catch to prevent the first cover from pivoting toward its open position, pivoting of the latch from its engagement position disengaging it from the catch to permit the first cover to pivot toward its open position;

E. a second cover having pivot and free ends, the second cover being pivotably mounted on the housing for pivoting, about a second pivot axis at the pivot end of the second cover, between a fully closed position, in which it closes the second aperture, and an open position, in which it permits access to the housing interior through the second aperture;

F. a cam on the second cover having a cam surface positioned and angled for engagement of the latch to urge the latch out of its engagement position when the second cover is brought into its closed position and thereby to permit the first cover to pivot toward its open position; and

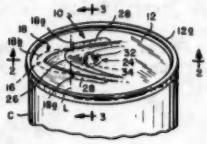
G. a stop member provided on the second cover and positioned, when the second cover is in its closed position and the cam surface has urged the latch out of its engagement position and permitted the first cover to pivot toward its open position, to stop the first cover in a cocked position, in which it still substantially closes the first aperture but in which the latch cannot pivot back into engagement with the catch, whereby the first cover is permitted to open automatically when the first cover is opened.

4,585,140

CAN LID WITH INTEGRAL PUSH-IN TAB

G. Steven Lambert, 57 W. 93rd St., New York, N.Y. 10028, and Michael P. Lambert, 21 Richmond St., Portsmouth, N.H. 03801

Continuation-in-part of Ser. No. 638,874, Aug. 8, 1984, abandoned, which is a continuation-in-part of Ser. No. 500,355, Jun. 2, 1983, Pat. No. 4,465,203. This application Feb. 22, 1985, Ser. No. 704,163
Int. Cl.[4] B65D 7/32
U.S. Cl. 220—268 16 Claims



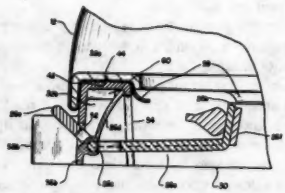
1. A container lid with an integral embossed push-in tab, said tab being of a size to receive a digit and an opening force applied thereby; a tear line formed as an open loop extending around one end of said tab rearwardly on both sides thereof to a hypothetical line extending across the lid, said tear line tearing upon the application of downward pressure at a selected location on the lid to form a pour opening in the lid delineated by said tear line; and a depression in the lid at or near each end of said tear line and extending along said lid to the opposite side of said hypothetical line from said tear line so that, when the tear line tears along its length to said hypothetical line, said lid folds or bends at said depression displacing said tab downward from the nominal plane of said lid.

4,585,141

LOCKING SYSTEM FOR FLOOD COVER

Robert J. Marks, Carpentersville, Ill., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Dec. 28, 1984, Ser. No. 687,057
Int. Cl.[4] H02G 9/02
U.S. Cl. 220—326 14 Claims



1. A locking system for use in a flood cover having a rigid

mouth, said cover adapted for placement over a vertically standing equipment closure having an outside surface, said locking system including at least two lock mechanisms, each of said mechanisms comprising:

(a) a surface contacting means;

(b) a stiff leg means having one end connected to said surface contacting means in a manner such that said contacting means projects upwardly therefrom at an angle, the length of said stiff leg means being greater than the air space which would result between said equipment closure outside surface and said flood cover if said cover should be placed over said closure such that said closure is centered in said rigid mouth;

(c) pivot means, the other end of said stiff leg means being connected to said pivot means; and

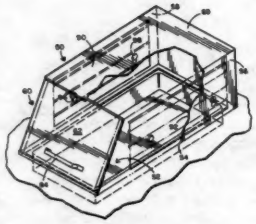
(d) spring means connected to said stiff leg means in a manner such that said spring means holds said stiff leg means essentially parallel to the opening of said rigid mouth prior to the placement of said cover over said closure, the tension of said spring means increasing as said cover is placed over said equipment closure and said surface contacting means contacts said closure outside surface to thereby cause said stiff leg means to pivot on said pivot means.

4,585,142

HIGH-CAPACITY FOOD WARMER COVER

Anthony J. Chulich, 10512 Dorothy Ave., South Gate, Calif. 90280

Filed Feb. 27, 1985, Ser. No. 706,012
Int. Cl.[4] B65D *43/14, 51/04*
U.S. Cl. 220—331 **17 Claims**



1. A food warmer cover, comprising:

(a) an open-bottomed enclosure dimensioned for placement over a warming pan in generally sealing relationship thereto;

(b) said enclosure having an open front, and shoulders protruding partially from the side into said open front;

(c) said enclosure further having a downwardly inwardly extending lip disposed along the top of said open front;

(d) generally horizontal supports extending inwardly along the sides of said enclosure at a level close to the level of said lip;

(e) the upper end of said shoulders being positioned slightly below said lip; and

(f) a generally planar door selectively closing said open front; said door having a downwardly outwardly extending flange along its top;

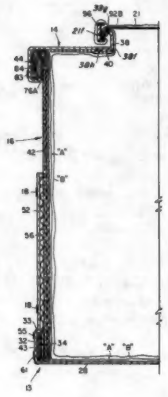
(g) whereby said door may be pivoted about said upper ends of said shoulders and slid rearwardly through the space between said upper shoulder ends and said lip to rest on said supports, the edge of said flange sliding downwardly rearwardly on said lip when said door is closed so as to bias the sides of said door into sealing engagement with said shoulders while the engagement of said flange with said lip provides a seal along the top of said door.

4,585,143

LIQUID CONTAINER

W. Douglas Fremow, Jeffersontown; James R. Whitworth, and Rex R. Atwell, both of Louisville, all of Ky., assignors to Boise Cascade Corporation, Boise, Id.

Filed Jan. 25, 1984, Ser. No. 573,691
Int. Cl.[4] B65D *5/40, 5/44, 5/60, 5/72*
U.S. Cl. 220—462 **19 Claims**



1. A liquid storage container comprising:

(a) an upstanding polygonal tube of corrugated fibreboard having a lower end cap of corrugated fibreboard strapped thereto;

(b) a pair of bags of liquid impermeable material located in said tube, one of said bags being inside the other of said bags;

(c) a top cap containing an aperture, the upper marginal portions of the outer one of said bags being clamped between said top cap and said tube, the inner one of said bags projecting up through said central aperture, the upper marginal portion of said inner bag extending radially outwardly from the said aperture and overlying the top of said cap to provide an opening into said bag at said aperture to permit filling the bag;

(d) drain spigot means connected to said bags for draining at least the inside bag; and

(e) a drain tube connected with said spigot means and extending through the wall of said container adjacent the bottom thereof.

6. A liquid storage container, comprising

(a) an upstanding polygonal tube of corrugated fiberboard having a lower end cap of corrugated fiberboard strapped thereto;

(b) support means girdling said tube above said lower end cap for supporting said tube against radial outward expansion, said support means including a plurality of hardboard panels having a corrugated fiberboard backing sheet arranged concentrically about said tube, and at least two vertically spaced girdling steel bands mounting said hardboard panels against said tube;

(c) a top cap covering said tube;

(d) a flexible bag in said container and extending successively radially inwardly beneath, and upwardly through an opening contained in the top cap; and

(e) a lid covering said opening, said lid being connected with said bag and said top cap outside said opening;

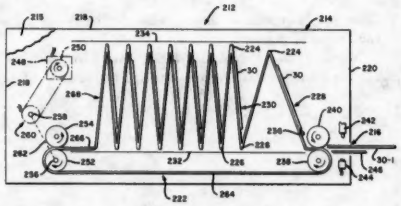
(f) a portion of said bag extending radially outwardly from the margins of said top cap opening and back radially inwardly over said lid to at least partially cover the same.

4,585,144

RECORD MEMBER DISPENSING SYSTEM

Robert H. Granzow, Miamisburg; William R. Horst; William J. Hale, both of Dayton, and Ralph B. Saunders, Moraine, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 26, 1980, Ser. No. 163,749
Int. Cl.[4] B65H *29/02*
U.S. Cl. 221—7 **14 Claims**



12. A currency dispenser comprising:

a housing having a discharge opening therein;

a flexible carrier;

a plurality of bills of currency;

means for retaining said bills of currency on said carrier;

means for moving said carrier within said housing so as to position successive ones of said bills on said carrier adjacent to said discharge opening; and

discharge means located near said discharge opening for removing successive ones of said bills from said carrier and also for discharging successive ones of said bills through said discharge opening;

said discharge means including a means for counting said bills as they are discharged through said discharge opening;

said moving means including an element positioned in said housing near said discharge opening to enable said carrier to change direction from a first direction to a second direction so as to facilitate the separation of said bills from said carrier;

said discharge means also including a pick-off member positioned along said first direction and also being aligned with regard to said discharge opening so as to enable a said bill to move along said first direction as said carrier is moved along said second direction to thereby separate a said bill from said carrier;

said retaining means including a plurality of spaced fingers which are formed in said carrier along the length thereof to detachable retain said bills thereon;

each of said fingers having a free end and each said bill having a leading edge and a trailing edge with regard to its position on said carrier; and said free end of said finger engaging a leading edge of an associated said bill to detachably retain said bill on said carrier.

4,585,145

TAPE DISPENSER

Pravin G. Pitroda, 401 Fairlane Dr., Joliet, Ill. 60435

Continuation of Ser. No. 349,594, Feb. 17, 1982, abandoned. This application Dec. 10, 1984, Ser. No. 680,225
Int. Cl.[4] B65H *1/08*
U.S. Cl. 221—58 **4 Claims**

1. Apparatus for storing and dispensing a stack of bill straps, said apparatus comprising:

a bottom member including a pair of opposed upstanding endwalls, a pair of opposed upstanding sidewalls and a floor member,

said bottom member endwalls including a first and a second endwall,

said bottom member shaped and dimensioned to hold therewithin said bill straps;

a lid having a first and second end, and a plurality of downwardly directed side members for operable telescopic and restrained receipt of said lid by said bottom member;

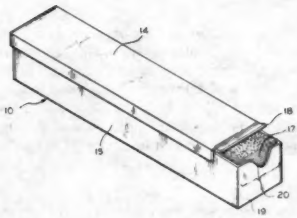
means within said bottom member for pressing said stack of bill straps toward said lid;

said means for pressing said stack of bill straps integrally comprising at least a portion of the floor member of said bottom member;

edge guiding means within said bottom member to grip the edges of said bill straps in said stack so as to maintain said bill straps in aligned fashion;

said edge guiding means comprising a plurality of rubber-like members positioned opposite one another along respective ones of said opposed upstanding sidewalls and further including edge guides operatively disposed about at least two of said plurality of rubber-like members to preclude migration of said rubber-like members in a direction substantially parallel to the longitudinal axis of said storage and dispensing apparatus;

at least two of said oppositely positioned ones of said plurality of rubber-like members extending upwardly to meet and pass the upper inner peripheral edge of said oppositely positioned upstanding sidewalls of said bottom member and returning downwardly along the outer peripheral



sidewalls so as to envelope at least a portion of each said sidewall with a portion of said rubber-like members;

said downwardly returning portion of said rubber-like members providing means for said restrained receipt of said downwardly directed side members of said lid by said bottom member by provision of a press fit

said restrained receipt of said downwardly directed side members of said lid by said rubber-like member portions along the outer peripheral sidewalls further serving to preclude migration of said rubber-like members in a direction substantially transverse to the longitudinal axis of said storage and dispensing apparatus potentially emanating from operation of same;

means formed on said apparatus to allow access to said stack for selective simultaneous manual withdrawal therefrom of one or more of said straps;

said access means including a curved lip formed on said lid proximate said first end of said lid and a cutout formed on said bottom member for facilitating said manual withdrawal of said one or more straps; and

said pressing means, said curved lip, said cutout and said edge guiding means cooperating so as to permit said selective simultaneous manual withdrawal as desired of said one or more bill straps from said apparatus.

4,585,146

OPEN TOP TANK WITH FLOW RATE CONTROL DEVICE THEREIN

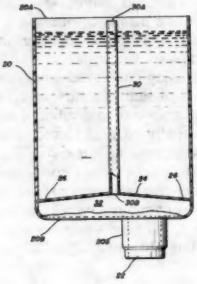
Simon J. Richter, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Jun. 16, 1983, Ser. No. 504,864
Int. Cl.[4] B65D *25/04, 25/32*
U.S. Cl. 222—1 **15 Claims**

1. An apparatus for dispensing liquids with a controlled rate of flow comprising:

a container with a top end, opened to the atmosphere, a bottom end with a discharge opening therein and sidewalls connecting said top and bottom ends;

a flow rate control tube having a top end, opened to the atmosphere, adjacent the top end of said container and a bottom open end disposed at a predetermined distance above said discharge opening, said tube establishing atmospheric pressure at said bottom open end thereof after an initial dispensing interval; and



diaphragm means extending between said flow rate control tube and said container sidewalls just above said bottom open end of said tube to establish said atmospheric pressure below said diaphragm means and to support said flow rate control tube within said container, said diaphragm means including weep hole means through which the liquid being dispensed may pass.

4,585,147

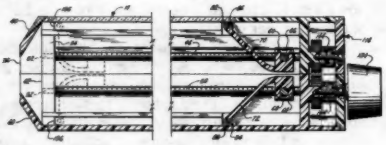
DISPENSER FOR COLLAPSIBLE TUBE CONTENTS

Tomasz J. Wodnicki, 6805 Veterans Blvd., Metairie, La. 70003

Filed Apr. 23, 1984, Ser. No. 602,902

Int. Cl.[4] B67D *5/22*; B65D *35/28*

U.S. Cl. 222—50 **10 Claims**



1. A dispenser for the contents of a collapsible tube, comprising:

an elongated housing having an internal cavity configured to receive a collapsible tube therewithin, said housing being provided with a dispensing aperture at a first end thereof;

a first pair of parallel, externally threaded rods rotatably mounted longitudinally within said housing;

a second pair of parallel, externally threaded rods rotatably mounted longitudinally within said housing in spaced, opposing, parallel relationship to said first pair of threaded rods;

a first flexible trapezoidally shaped squeezer mounted to said first pair of threaded rods and a second flexible trapezoidally shaped squeezer mounted to said second pair of threaded rods, said squeezers being configured to cooperatively squeeze the contents out of the collapsible tube as the squeezer's move from a first position to a second position, each squeezer having a first base which is positioned to be in contact with the tube in both the first and second positions, the squeezers also having a second base, each squeezer being provided with means for decreasing the distance between the first and second bases of each squeezer as the squeezer moves from the first position to the second position, the decreasing distance between the bases changing the profile of each squeezer to bring the squeezer into greater contact with the tube to be squeezed.

4,585,148

PROCESS AND APPARATUS FOR METERING LIQUID COLORANT

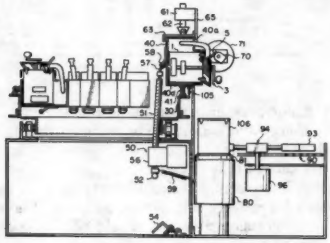
Yoshito Ito, Yokohama, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Filed Feb. 1, 1984, Ser. No. 575,846

Claims priority, application Japan, Feb. 5, 1983, 58-16887

Int. Cl.[4] B67B *7/00*

U.S. Cl. 222—77 **4 Claims**



3. An apparatus for metering liquid colorant into a collecting container, comprising:

a rotary table rotatable in a horizontal plane;

a plurality of reservoir bases mounted around the circumference of said rotary table and pivotally mounted on said table for pivotal movement from a horizontal to a vertical position;

a plurality of primary color reservoirs removably mounted on the respective bases in an upright position, each reservoir having an open top and a valve mechanism for controlling the flow of liquid colorant removably mounted on the open top for closing the top;

a tilting device at a position around the table for pivoting a reservoir base which is at a position opposite said tilting device so as to tilt the reservoir on said base from the upright to a horizontal position;

a valve drive member at a position corresponding to the position of said tilting device and engaged by said valve means when the reservoir is tilted;

a pulse motor connected to said valve drive member for driving said valve drive member for moving said valve mechanism in an opening and a closing direction;

an electronic balance located under said valve drive member for supporting a collecting container thereon to receive colorant from the valve mechanism of a tilted reservoir; and

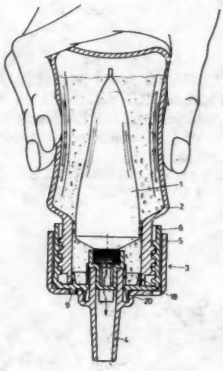
means to which the output from said electronic balance is connected and having an output connected to said pulse motor for driving said pulse motor to drive said valve drive member to move said valve mechanism in first, second and third stages of metering control at least partly in response to the weight of the colorant collected in the collecting container, said first metering control stage consisting of reducing the degree of opening of said valve mechanism in a stepwise fashion, the second metering control stage consisting of adjusting the degree of opening of the valve mechanism for obtaining a predetermined increment of liquid flow, and the third metering control stage consisting of intermittently closing and opening the valve mechanism for producing successive drops of liquid colorant.

4,585,149

DOUBLE CONTAINER FOR TWO SEPARATED FLUIDS

Karl H. Zulauf, Höchst-Hassenroth, Fed. Rep. of Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Oct. 20, 1983, Ser. No. 544,000
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239784
Int. Cl.[4] B65D 35/22
U.S. Cl. 222—94 24 Claims



1. A double container for two fluids, comprising an outer container defining an interior and accomodating a first fluid; an inner container located in the interior of the outer container and accomodating a second fluid; an outlet nozzle being selectively in communication with the inner and outer containers; and means for selectively locking the access from the inner and outer containers to the outlet nozzle and including an inner locking part aranged on the outer container and being connected to the inner container, and an outer locking part connected to the outlet nozzle and pivotally arranged on the inner locking part which accommodates at least one opening communicating with the outer container and at least one further opening communicating with the inner container, so that upon rotation of the outer locking part with respect to the inner locking part, the first and second fluid are selectively discharged through the associated opening, said outer locking part being provided with at least one blocking member for selectively sealing off said at least one opening and said at least one further opening, said inner locking part being provided with a prolongation projecting into the interior of the outer container and connected to the inner container, said prolongation accommodating the openings.

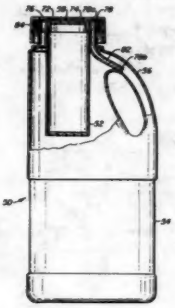
4,585,150

MULTIPLE LIQUID PROPORTIONAL DISPENSING DEVICE

Robert C. Beacham; Robert E. Switek, Jr., both of Livermore, and Jack Buelow, Danville, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Sep. 7, 1983, Ser. No. 530,770
Int. Cl.[4] B67D 5/56
U.S. Cl. 222—129 17 Claims

6. A device for dispensing liquids by gravity comprising a container defining therein a first and a second chamber of substantially proportional geometrical shape, each chamber communicating with a medium surrounding the container through a pouring orifice and a vent passage located at corresponding positions for the two geometrically similar chambers, each vent passage having an inlet end at the surface of the corresponding container and an outlet end inside such container, the two chambers having substantially the same orientation so that, when the two chambers are filled to substantially the same proportion with two different liquids and when the container is then tilted so that the elevation of the outlet end of the vent passage remains above that of the pouring orifice during the pouring process wherein the ratio of the volume of the first chamber to that of the second is K and the ratio of the



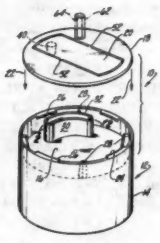
area of the pouring orifice of the first chamber to that of the second is $(C_2/C_1)K^{5/6}$, where C_1, C_2 are the flow coefficients of the two liquids in the first and second chambers respectively, the ratio of of the flow rate of liquid poured from the first container to that of the second is substantially constant and equal to K.

4,585,151

CHILD RESISTANT DISPENSER

Edward Luker, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Nov. 5, 1984, Ser. No. 668,506
Int. Cl.[4] B67D 5/32
U.S. Cl. 222—153 18 Claims



14. A two piece safety dispensing closure for a container, comprising, in combination:

a cylindrical cap having means for attachment to a container, a recessed top, and inwardly extending lip at the top end of the cylindrical wall overlying said recessed top, and pedestal support means extending upwardly from said recessed top terminating below said lip, and a projection extending upwardly from said recessed top and containing a dispensing orifice extending therethrough;

a disc shaped cover supported by said pedestal means and retained by said lip for rotation relative to said cap, said cover having a depending protuberance with a dispensing opening extending therethrough; and

a rocker arm occupying a portion of said cover and being pivotably connected thereto by a torsion hinge, said rocker arm having a depending plug for sealing said dispensing orifice;

whereby said cover is locked against rotation by said plug

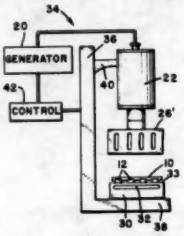
and said protuberance in cooperation with said projection in a first sealed position, and upon depression of said rocker arm, releasing said cover for rotation in a direction to align said dispensing opening with said dispensing orifice in a second dispensing position.

4,585,152

METHOD AND APPARATUS FOR DEGATING PARTS USING ULTRASONIC ENERGY

Thomas B. Sager, Newtown, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Dec. 13, 1984, Ser. No. 681,372
Int. Cl.[4] B26F *3/00*
U.S. Cl. 225—1 **5 Claims**



1. The method of simultaneously degating a plurality of molded thermoplastic parts which are joined to a runner by respective gates comprising the steps of:

disposing the parts while joined to the runner upon an anvil plate dimensioned to undergo flexural motion, said anvil plate forming the top plate of an anvil;

providing a source of ultrasonic energy including a horn dimensioned to be resonant as a half wavelength resonator when energized with ultrasonic energy at a predetermined frequency coupled thereto, and

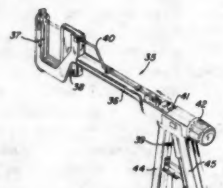
coupling said horn when rendered resonant to said runner whereby to subject said runner to ultrasonic energy and to cause said anvil plate to undergo flexural motion in the range of approximately 0.1 to 0.25 inch peak-to-peak displacement at a frequency less than that of predetermined frequency to cause a burnout of the respective gates and freeing said parts from connection to said runner.

4,585,153

SURGICAL INSTRUMENT FOR APPLYING TWO-PIECE FASTENERS COMPRISING FRICTIONALLY HELD U-SHAPED STAPLES AND RECEIVERS (CASE III)

Stephen J. Failla, Chester, and Anthony S. Miksza, Jr., Jersey City, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 16, 1984, Ser. No. 631,112
Int. Cl.[4] A61B *17/00*
U.S. Cl. 227—19 **1 Claim**



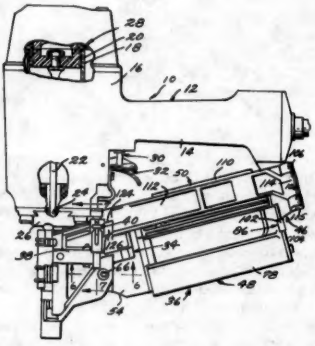
1. In a surgical instrument for stitching tissue by means of two-piece fasteners, said fasteners comprising a substantially U-shaped staple member and a receiver to engage the legs of said U-shaped staple member and lock therewith, said instrument having a pair of oppositely disposed jaws with the U-shaped staple members disposed in one jaw and the cooperating receivers disposed in said opposite jaw, said instrument including means for positioning the jaws with respect to each other while the tissue is therebetween to form an appropriate gap between the jaws and said instrument including means for driving the legs of the U-shaped members through the tissue to be joined and causing said legs to lock with the receiver in the opposite jaw, the improvement comprising a plurality of deflectable portions disposed in the jaw with each deflectable portion frictionally engaging a U-shaped staple member for releasably holding said staples as they are driven through the tissue and for releasing said U-shaped staple members when the legs thereof are locked by the receiver.

4,585,154

FASTENER DRIVING TOOL WITH ADJUSTABLE THREE-PART MAGAZINE CANISTER ASSEMBLY

William S. Fealey, Jamestown, and Prudencio S. Canlas, North Kingstown, both of R.I., assignors to Bostitch Division of Textron Inc., Providence, R.I.

Filed Mar. 26, 1984, Ser. No. 593,297
Int. Cl.[4] B25C *1/00, 1/04, 7/00*
U.S. Cl. 227—109 **15 Claims**



1. A fastener driving tool comprising a housing, a magazine canister assembly carried by said housing for containing a coiled fastener package, means for feeding successive leading fasteners of the package into predetermined position to be driven and means for driving successive fasteners from said predetermined position into a workpiece, the improvement which comrpises

said canister assembly comprising a mounting part, a package supporting part and a package covering part adjustably interrelated with respect to one another so as to contain a selected one of a series of coiled fastener packages, in which the fasteners of each coiled package are of incrementally different lengths with respect to the fasteners of the remaining packages of the series;

means for fixedly mounting said mounting part on said tool housing,

said package supporting part including a generally circular fastener point engaging bottom wall and integral peripheral wall means extending in an axial direction with respect to the axis of said circular bottom wall from a substantial portion of the exterior periphery of said bottom wall,

selectively operable means acting between the exterior periphery of a portion of said peripheral wall means and said mounting part for releasably fixedly supporting said package supporting part on said mounting part in a selected on of a plurality of different operative positions depending upon the nail size of the package which is selected for containment, said package supporting part being displaced

with respect to said mounting part in the axial direction with respect to the axis of said circular bottom wall in parallel relation to itself in said plurality of different operating positions,

means for supporting said package covering part on said mounting part for movement between (1) an operative position overlying the bottom wall of said package supporting part in any of its selected operative positions so as to contain the corresponding selected package in point supported relation on the bottom wall and within the peripheral confinement of the peripheral wall means of the package supporting part and (2) an access position wherein the space overlying the bottom wall is sufficiently open to permit movement of the package into point supported relation to the bottom wall within the peripheral wall means of said package supporting part, and

means for releasably locking said package covering part in said operative position.

4,585,155

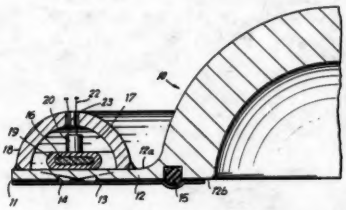
EXPLOSIVE WELDING PATCH UNIT AND METHOD

Irwin Berman, Montclair, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 27, 1984, Ser. No. 604,707

Int. Cl.⁴ B23K *20/08*

U.S. Cl. 228—107 **13 Claims**



1. A welding patch unit useful for closing an opening in a metal wall by explosive welding, said unit comprising:

(a) a metal plate adapted for covering an opening in a metal wall, said plate having a continuous double angled recess on one side thereof for placing against the metal wall;

(b) securing means associated with said plate for initially attaching the plate over an opening in the metal wall; and

(c) an explosive charge attached to the opposite side of said plate and within an enclosure near the perimeter of the plate, whereby said metal plate can be initially attached to the metal wall by the securing means prior to detonating the explosive charge for explosively welding the plate onto the wall.

4,585,156

SCREEN FABRICATION

Garland E. Raley, and Dean M. Spear, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 534,359, Sep. 21, 1983, Pat. No. 4,543,299.

This application Jan. 10, 1985, Ser. No. 690,050

Int. Cl.⁴ B21D *39/00*

U.S. Cl. 228—132 **20 Claims**

1. A method of fabricating a laminated, cylindrical metal screen or molding element for vacuum perforation of plastic film or sheets, comprising the steps of:

a. preparing at least two matched relatively thin seamless, cylindrical metal screens, each of a predetermined size;

b. overplating each of said matched relatively thin screens with a thin plate of a bonding metal whereby after plating, the inside diameter of the largest screen fits, within a specified tolerance, the outside diameter of the next largest screen;

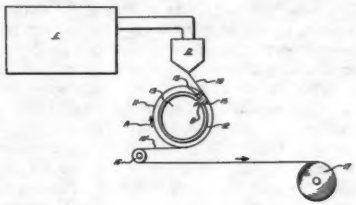
c. preparing two seamless, cylindrical metal sleeves, each of a predetermined size with one having a larger diameter than the other;

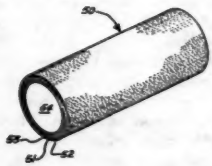
d. chrome plating the inside surface of the smaller diameter sleeve whereby after plating, the inside diameter of the larger diameter sleeve fits, within a specified tolerance, the outside diameter of the largest diameter metal plated matched screen and the outside diameter of the smaller diameter sleeve fits within a specified tolerance the inside diameter of the smallest diameter plated matched screen;

e. coating the entire inside surfaces of each of the matched screens with a flux;

f. mounting the larger diameter sleeve in a cradle and so restraining it as to retain its cylindrical shape;

g. malforming the largest diameter matched screen, sliding it inside the larger diameter sleeve and then reforming it to its cylindrical shape;





h. malforming the next largest diameter matched screen, sliding it inside the largest diameter matched screen, aligning the two screens and fastening them together, and then reforming said next largest diameter matched screen to its cylindrical shape;

i. successively installing any remaining screens in a manner similar to that of step h;

j. after all of the matched screens have been installed, installing the smaller diameter cylindrical sleeve in a manner similar to that of the matched screens thereby completing the assembly;

k. after assembly is completed, uniformly heating it in an oven to a predetermined temperature to bond each matched screen to the other matched screens;

l. cooling the assembly to near ambient temperature, and then removing it from the oven; and,

m. carefully axially cutting the larger diameter sleeve and removing it from the assembly; and,

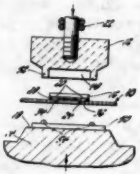
n. removing any remaining flux and removing the smaller diameter sleeve, thereby providing the desired laminated cylindrical metal screen.

4,585,157

TAPE BONDING OF TWO INTEGRATED CIRCUITS INTO ONE TAPE FRAME

Stephen R. Belcher, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 4, 1985, Ser. No. 719,987
Int. Cl.[4] B23K *31/02, 1/12*
U.S. Cl. 228—180.2 **3 Claims**



1. A method of tape bonding two integrated circuit chips in a face-to-face relationship to a single site of finger leads situated in a tape type lead frame comprising the steps of:

providing a first integrated circuit chip having a plurality of contact pads situated on a surface of said chip,

providing a length of said tape containing a plurality of said sites each having a first and a second group of finger leads, each finger lead having an inner free end, said tape having first and second opposed major surfaces,

bonding said inner free ends of said first group of finger leads in one such site to the corresponding contact pads on said first chip such that contact bumps interconnect the chip contact pads to the first group of finger leads on said first major surface of the tape by compressing said finger leads and said chip between a heated thermode member and an anvil member,

providing a second integrated circuit chip having a plurality of contact pads situated on a surface of said chip that cooperate with the second group of finger leads to provide interconnection sites outside the periphery of the first integrated circuit as bonded to the lead frame site,

bonding said inner free ends of said second group of finger leads in said site to the corresponding contact pads on said second chip by compressing said finger leads and said chip between a thermode member and an anvil member, said thermode member having a recess in its surface accommodating said first bonded chip so that no pressure is applied to said chip when bonding the second group of finger leads to the second chip.

4,585,158

METHOD OF WELDING USING PREHEATING INSERT FOR HEAVY WALL PIPE

Louis J. Wardlaw, III, 15306 Bonita Springs, Houston, Tex. 77083

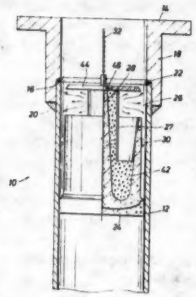
Division of Ser. No. 366,555, Apr. 8, 1982, Pat. No. 4,507,082, which is a continuation-in-part of Ser. No. 236,999, Feb. 23, 1981, abandoned. This application Nov. 23, 1984, Ser. No. 674,257
Int. Cl.[4] B23K *23/00*
U.S. Cl. 228—232 **4 Claims**

1. The method of welding a pipe by preheating a pipe section thereof, comprising the steps of:

(a) igniting a combustible solid fuel mixture supported within the pipe;

(b) positioning the solid fuel mixture within the pipe opposite the pipe section where a weld bead is to be formed;

(c) heating the pipe section by convection to an elevated temperature by directing heated gases given off by the ignited fuel mixture against the pipe section;



(d) monitoring the temperature of the pipe section to determine that the pipe section has been heated to a specified temperature; and

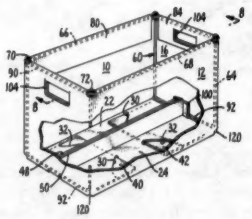
(e) welding the pipe by forming a multi-pass bead.

4,585,159

COLLAPSIBLE CONTAINER AND FRAME

Claiborne L. Travis, Bogalusa, La., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Apr. 18, 1985, Ser. No. 724,728
Int. Cl.[4] B65D *5/12*
U.S. Cl. 229—41 R **13 Claims**



1. A collapsible container comprising:

a pair of opposed first walls;

a pair of opposed second walls connected to said first walls along fold lines, said walls being selectively moveable about said fold lines to bring said walls into face-to-face engagement;

first bottom flaps hingedly connected to said first walls along hinge lines and defining apertures therein;

second bottom flaps hingedly connected to said second walls and having locking portions positionable in said first bottom flap apertures to form a container bottom;

a lock panel connected to each of said first bottom flaps along a free edge of the first bottom flap, said free edge being spaced from the hinge line connecting the first bottom flap to its associated first wall, the lock panels being disposed generally perpendicular to said first bottom flaps and in abutting engagement when said locking portions are positioned in said apertures to form said container bottom, said first and second bottom flaps and said abutting lock panels being cooperable to prevent said walls from moving into face-to-face engagement; and

a collapsible frame member formed of pivotally interconnected rigid elements affixed to said walls, means for securing one of said rigid elements of said frame member to each of said walls so that each rigid element is moveable

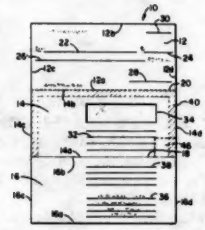
with said walls into collapsed condition when said container is collapsed.

4,585,160

NEGOTIABLE INSTRUMENT MAILING DEVICE

William W. Fiske, II, 2038 Old Gulph Rd., Villanova, Pa. 19085-1822

Filed Apr. 29, 1985, Ser. No. 728,425
Int. Cl.[4] B65D *27/04, 27/06*
U.S. Cl. 229—92.3 **7 Claims**



1. A negotiable instrument mailing device including a return envelope formed from a single generally continuous blank of paper or the like, comprising:

an addressee panel, including two transversely extending edges and two side edges, a first surface of the addressee panel having a space for the insertion of the address of the addressee, the addressee panel also including a window opening;

a return address panel, including two transversely extending edges and two side edges, a first one of the transversely extending edges of the return address panel being attached to a first one of the transversely extending edges of the addressee panel along a common fold line, a first surface of the return address panel being imprinted with a return address, the return address panel and the addressee panel being adapted to be folded along their common fold line so that their first surfaces are enclosed, the return address being positioned on the return address panel to be in registry with the addressee panel window opening when the panels are so folded so the return address is visible through the addressee panel window opening;

a negotiable instrument panel including two transversely extending edges and two side edges, one of the transversely extending edges of the negotiable instrument panel being removably attached to the second transversely extending edge of one of the addressee panel or the return address panel along a common tear line of perforations, a first surface of the negotiable instrument panel being imprinted with normal negotiable instrument indicia; and

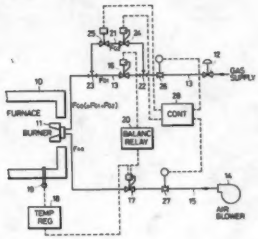
adhesive means for securing the addressee panel to the return address panel when folded along their common fold line, whereby the negotiable instrument panel and the return address panel may be folded behind the addressee panel and the device may be inserted into a window envelope so that the address on the addressee panel is visible through the envelope window for delivery to the addressee and, after delivery to the addressee, the negotiable instrument panel may be removed and information may be imprinted on either the return address panel or the addressee panel and the return address panel may be folded with respect to the addressee panel along their common fold line and secured by the adhesive means to form the return envelope.

4,585,161

AIR FUEL RATIO CONTROL SYSTEM FOR FURNACE

Akio Kusama, Tokyo; Ichiro Nakamachi, Abiko; Kunio Shigihara, Fuchu; Hiroyuki Amemori, Kawasaki; Yasuji Miyata, and Tetsuo Iwamoto, both of Yokohama, all of Japan, assignors to Tokyo Gas Company Ltd. and Tokico Ltd., JPX

Filed Mar. 18, 1985, Ser. No. 712,898
Claims priority, application Japan, Apr. 27, 1984, 59-62414[U]; Sep. 19, 1984, 59-194583; Sep. 19, 1984, 59-194584
Int. Cl.[4] F23N *1/00*
U.S. Cl. 236—15 BD **8 Claims**



1. An air fuel ratio control system comprising;

a first control valve provided in a fuel supplying pipe through which a fuel is supplied to a burner;

a second control valve provided in an air supplying pipe through which air is supplied to said burner;

varying means for varying responsive to a preset flow rate of fuel a valve opening degree of each of said first and second control valves while maintaining a constant ratio between the valve opening degrees of said first and second control valves, so that an air fuel ratio of a flow rate of fuel flowing through said first control valve and a flow rate of air flowing through said second control valve assumes a value greater than a theoretical air fuel ratio;

a first flow rate sensor for detecting a flow rate of fuel flowing through said fuel supplying pipe;

a second flow rate sensor for detecting a flow rate of air flowing through said air supplying pipe;

a fuel bypass pipe provided in said fuel supplying pipe for bypassing said first control valve;

a third control valve provided in said fuel bypass pipe; and

control means supplied with output signals of said first and second flow rate sensors for controlling a valve opening ratio of said third control valve, so that said air fuel ratio assumes a predetermined air fuel ratio.

4,585,162

MEANS FOR AUTOMATIC AMBIENT TEMPERATURE CONTROL

Richard C. Evans, 305 Phoenix Village Rd., Muskogee, Okla. 74401

Continuation of Ser. No. 570,342, Jan. 13, 1984, abandoned. This application Jun. 14, 1985, Ser. No. 744,890
Int. Cl.[4] G05D *23/00*; H01H *3/16*
U.S. Cl. 236—47 **1 Claim**

1. An automatic comfort control system for use in hotel or motel rooms having an entry door and a comfort conditioning system such as a heating and/or air conditioning system, comprising:

a first temperature responsive switch means positioned in the room and selectively settable at a minimally acceptable operating temperature;

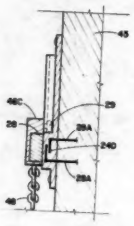
a second temperature responsive switch means positioned in the room and selectively settable at an ideal operating temperature, said minimally acceptable operating temperature being such as to achieve energy savings as compared to said ideal operating temperature;

a door chain unit secured to the inside of a door closing the

room, the unit including an elongated groove open at one end and closed at the other end, and having adjacent the closed end a magnetically actuatable switch;

a door lock chain having one end attached to a wall in the room adjacent the door;

a magnet affixed to the other end of said chain, and having a knob thereto slideable in said groove whereby said knob may be positioned in said groove to lock the door and when in locked position the magnet is adjacent to and actuates said switch in said door chain unit; and



conductors connecting said first and second temperature responsive switches and said magnetically actuatable switch with the comfort/conditioning system for the room and arranged such that when said magnet housing affixed to said chain is positioned with said knob in said groove said magnet actuates said switch to connect said second thermostat to control the comfort conditioning system, and when said knob is not in said groove, said switch is therby not subject to said magnet and said first thermostat is connected to control said comfort conditioning system.

4,585,163

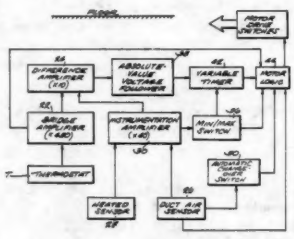
VARIABLE AIR VOLUME SYSTEM CONTROL

Stephen E. Cooley, and Martin J. Jensen, both of Madison, Wis., assignors to Wehr Corporation, Milwaukee, Wis.

Continuation of Ser. No. 508,808, Jun. 28, 1983, abandoned. This application Feb. 15, 1985, Ser. No. 702,232

Int. Cl.[4] F24F *7/00*

U.S. Cl. 236—49 **13 Claims**



1. A control for positioning the damper in a variable air volume system, comprising,

a motor for opening and closing a damper,

thermostat means sensing temperature in a conditioned space and developing a voltage singal indicative of the temperature in the space compared to the thermostat setting,

air flow sensing means positioned to sense the air flow into the conditioned space and developing a voltage signal indicative of air velocity,

and timing means operative to always periodically energize said motor for some portion of a given repetitive time period and responding to both of said voltage signals to vary said portion and the effective speed of said motor to decrease the speed of the motor moving the damper as temprature in the space approaches the set point of the thermostat.

4,585,164

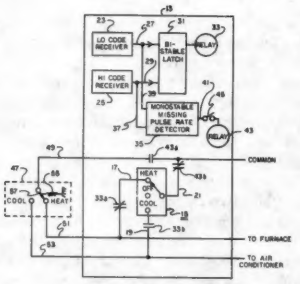
PORTABLE ENERGY LEVEL CONTROL SYSTEM

Joseph J. Butkovich, 4107 Thomas St., Oceanside, Calif. 92056; Robert A. Buchaklian, Jr., 6685 Archwood Ave., San Diego, Calif. 92120, and Gregory Campbell, 12131 Caminito Campana, San Diego, Calif. 92128

Filed Sep. 24, 1984, Ser. No. 653,298

Int. Cl.[4] G05D *23/00*

U.S. Cl. 236—51 **8 Claims**



1. Energy control for interior environmental energy system comprising:

(a) a portable energy level indicator for location in area of desired energy control comprising:

(1) means for sensing area energy level departure from a preselected value;

(2) an electromagnetic pulse transmitter;

(3) means for triggering said pulse transmitter to emit a series of spaced apart signal pulses in response to action of said area temperature sensing means when the energy level departs from said preselected value through a code preset for the selected energy system; and,

(b) an actuator unit in communication with the environmental energy system comprising:

(1) means for selecting specific energy system;

(2) pulse code receivers corresponding to each specific energy system adapted to receive the appropriate electromagnetic signal pulses;

(3) means for relaying said coded signal pulses in bi-stable latched mode to the appropriate specific energy system to bring area energy level back to said pre-selected level; and,

(4) a missing pulse rate detector, retained in a first passive mode, overriding other energy control units during exposure to any specific energy system coded signal pulses, and translated to a second mode by an absence of said signal pulse for a preselected multiple of pulse intervals.

4,585,165

MEANS FOR SETTING THE SWITCHING ON AND OFF PERIODS OF A BURNER OF A HOT WATER HEATING INSTALLATION

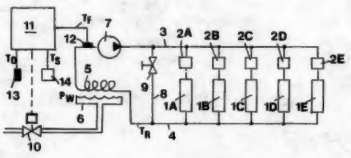
Kristian Iversen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jul. 8, 1985, Ser. No. 752,833

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426937

Int. Cl.[4] F24D *3/00*

U.S. Cl. 237—8 R 9 Claims



1. A hot water heating system, comprising, supply and return conduits, a plurality of individually operated radiators arranged in parallel connected to said supply and return conduits, pump means and heat exchanger means arranged in series with said supply and return conduits for supplying heated water to said radiators, temperature sensor means for determining the outlet temperature of said heat exchanger means, temperature setting means for setting a reference temperature, comparator means responsive to said temperature sensor means and said temperature setting means for generating a differential value corresponding to the difference between said outlet temperature and said reference temperature, integrator means fed with said differential value for generating an integrated value, and hysteresis switch means connected to said integrator means for switching said heat exchanger means on when said integrated value reaches one limiting value of said hysteresis switch means and for switching said heat exchanger means off when said integrated value reaches the other limiting value of said hysteresis switch means.

4,585,166

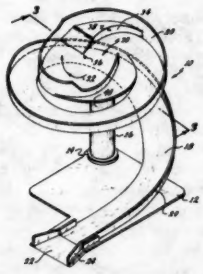
COLLAPSIBLE TOY AUTOMOBILE RACE COURSE

William F. Stephens, Hicksville, N.Y., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 25, 1984, Ser. No. 664,626

Int. Cl.[4] A63H *18/02*

U.S. Cl. 238—10 R 5 Claims



1. A toy vehicle course comprising:

a spiral track capable of relaxing into an essentially collapsed position;

means for biasing the track to act as a spring having an extended taut position;

means for holding the track in an extended position so that one end of the track is higher than the other end; and

means at the higher end of the track for reversing the direction of a toy vehicle traveling thereon including an end section of track having first and second wall means for guiding the vehicle in the end section and gradually inclined portion means for directing the vehicle back down the track from the higher end to the other end of the track.

4,585,167

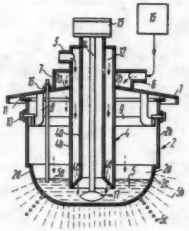
METHOD FOR DIVIDING BULK LIQUID INTO DROPS

Boris G. Kholin, ulitsa Lenina, 107, kv. 37, Sumy, U.S.S.R.

Filed Oct. 7, 1982, Ser. No. 433,235

Int. Cl.[4] B05B *1/08, 17/06*

U.S. Cl. 239—4 13 Claims



1. A method of dividing a bulk liquid into drops, comprising the steps of:

(a) delivering a liquid in a range of flow rates into a perforated container so that it will be divided, said container having discharge orifices located at different levels and said liquid having a free surface;

(b) causing said liquid to outflow in jets from said discharge orifices of said perforated container;

(c) simultaneously maintaining a constant positive gas pressure over the free surface of the liquid in said perforated container within the entire range of flow rates in the delivery of the liquid and

(d) dividing said liquid jets into drops.

4,585,168

HIGH PRESSURE LIQUID INSTALLATION

Hans-Dieter Even, Duisburg; Bodo Missmahl, Duesseldorf; Karl-Heinz Redmers, Moers, and Hubertus Rembe, Krefeld, all of Fed. Rep. of Germany, assignors to WOMA Apparatebau, Duisburg, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,545

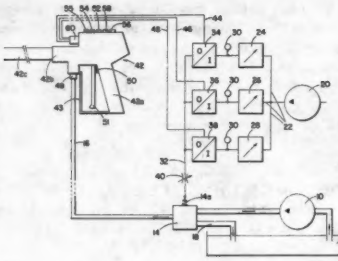
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313249

Int. Cl.[4] B67D *5/38;* B05B *9/03, 7/02*

U.S. Cl. 239—74 14 Claims

1. High-pressure liquid installation with a pressurized liquid generator to which a spraying device is connected, a valve between the pressurized liquid generator and the spraying devce which can be opened and closed by remote operation by a switch in order to feed the liquid to the spraying device or return the same to the region of the suction side of the pressurized liquid generator, said valve being constructed as an adjustable pressure-limiting valve and adjustable in its pressure by remote operation, electrical control elements arranged in association with the spraying device and operable to adjust said pressure limiting valve, a delay device for surge-free pressure adjustment associated with the valve, and said pressure limit-

ing valve having at least two pressure stages which are selectable by actuation of said control elements and preadjustable in



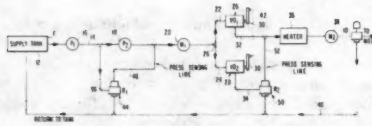
conformity with required pressure levels, and a control device for preadjusting said required pressure levels.

4,585,169

CONSTANT VOLUME FLOW BURNER FUEL CONTROL SYSTEM

Joseph B. Kinsey, Harrisonburg, Va., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Filed Jun. 2, 1982, Ser. No. 384,294
Int. Cl.[4] F04B *23/04, 49/00;* F04D *15/00*
U.S. Cl. 239—75 **2 Claims**



1. A burner control system for insuring constant volume flow of liquid fuel, irrespective of viscosity changes for said fuel, said system comprising:

a fuel supply tank bearing liquid fuel,

a burner nozzle,

a burner nozzle fuel supply line connecting said tank to said nozzle,

a fuel return line connecting said nozzle back to said tank for returning excess fuel,

first and second positive displacement fuel pumps in series and in order within said fuel supply line,

branch lines within said fuel supply line downstream of said second fuel pump,

separate, identical first and second variable orifices separately positioned within said branch lines, respectively, each varaible orifice having an inlet connected to a respective branch line, said first orifice having an outlet connected to said nozzle and said second orifice having an outlet connected to said return line,

means responsive to the pressure at the discharge side of said second pump for controlling the discharge pressure of said first pump,

means responsive to the discharge pressure of said first variable orifice for controlling the discharge pressure of said second variable orifice, and

means for mechanically linking said separate variable orifices for controlling said variable orifices such that as one opens the other closes;

and wherein each of said variable orifices includes a control rod for varying the opening size of each orifice, and said means mechanically linking said separate variable orifices comprises a means for mechanically linking said rods to variably position said control rods such that as one orifice opens, the other closes, and vice versa;

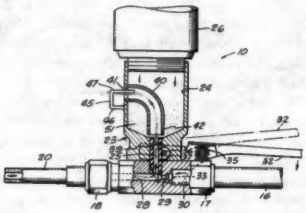
whereby, the control of the discharge pressure from said first pump maintains essentially zero pressure differential across said second pump to eliminate any flow variations caused by slip in the pump as viscosity changes, and the control of the discharge pressure of said second variable orifice is such that the pressure differential across both variable orifices are identical to insure that the percentage flow through respective variable orifices remains the same, thereby maintaining fuel flow through the nozzle limited and fixed regardless of the viscosity of the liquid fuel.

4,585,170

BACK FLASH PREVENTER FOR A POWDER SPRAY TORCH

James Y. Anderson, 1838 Cliffhill Dr., Monterey Park, Calif. 91754

Filed Aug. 8, 1984, Ser. No. 638,851
Int. Cl.[4] B05B *1/24*
U.S. Cl. 239—85 **3 Claims**



1. In a powder feeding device for feeding powdered metal to a powder spray torch of the type having a powder hopper having a powder outlet equipped with means for detachably coupling a powder container thereto, a back flash safety tube mounted within said hopper having a first end axially aligned with said powder outlet and closely spaced therefrom to permit powder flow into said powder outlet and a second end secured to said hopper and opening through the wall thereof to the atmosphere, said back flash safety tube being characterized in the provision of rigid guard means projecting outwardly from said second end thereof and constructed and arranged to thwart efforts of the user to close said second end of said safety tube.

4,585,171

FUEL INJECTION UNIT FOR A DIESEL ENGINE CYLINDER

Harald Schmidt; Josef Morell, both of Vienna; Günther Herdin, Steyr, and Otto Freudenschuss, Vienna, all of Austria, assignors to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

Filed Mar. 7, 1985, Ser. No. 708,991
Claims priority, application Austria, Mar. 8, 1984, 774/84
Int. Cl.[4] F02M *59/00*
U.S. Cl. 239—88 **6 Claims**

1. A fuel injection unit for a diesel engine, comprising:

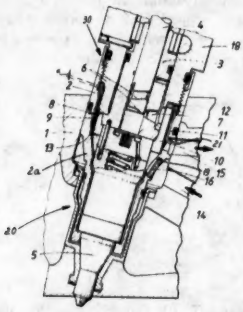
a housing defining an axis;

a piston pump including a pump element acommodated within said housing and defining at least one flow passage through which returning fuel is discharged, said pump element and said housing defining a supply space therebetween which is in communication with said flow passage;

a nozzle means connected to said pump element;

baffle means dividing said supply space into two chambers in vicinity of said flow passage so as to protect said housing from impinging fuel discharged through said flow passage;

inlet means connected to one of said chambers for allowing supply of fuel into said supply space; and



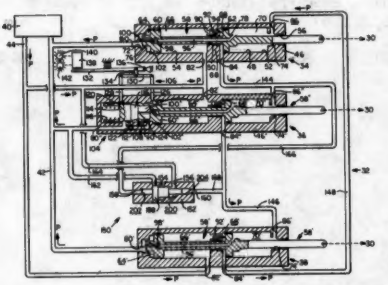
outlet means connected to the other of said chambers for allowing discharge of fuel from said supply space.

4,585,172

HYDRAULIC ACTUATION

Raymond W. Gazzera, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 7, 1983, Ser. No. 540,574
Int. Cl.⁴ F15B *21/04*
U.S. Cl. 239—265.33 **22 Claims**



1. In an actuator for moving a load member in response to a flow of pressurized liquid from a source thereof, said actuator comprising a pair of variable-volume chambers expanding and contracting in response to movement of said load member, the method of purging gaseous fluid from said actuator comprising the steps of: communicating said pair of variable-volume chambers one with the other; flowing pressurized liquid in a first direction from said source sequentially through said pair of variable-volume chambers; and utilizing said flow of pressurized liquid to move said gaseous fluid from said actuator to said source of pressurized liquid, and including further the step of moving said actuator to one of a first add a second position in response to said flow of pressurized liquid through said communicating pair of variable-volume chambers, further including closing said fluid communication between said pair of variable-volume chambers in a second direction opposite to said first direction in response to a flow of pressurized liquid from said source in said second direction, and further including trapping in said actuator in response to said closing of said fluid communication in said second direction between said pair of variable-volume chambers a substantially closed mass of pressurized liquid having a substantially constant volume, including further the step of decreasing the volume of any gaseous fluid included in said mass of pressurized liquid by increasing the pressure level of the latter significantly above ambient pressure, including further the step of utilizing a flow of pressurized liquid from said source communicated from one of said pair of variable-volume chambers in said first direction to said mass of pressurized liquid to fill the volume by which said gaseous fluid is decreased in response to said increasing pressure level.

16. A fluid pressure responsive actuator comprising:

a fluid pressure source including a first port selectively connecting alternatively to supply fluid at a determined pressure, and to a relatively lower pressure fluid reservoir; and a second port continuously supplying fluid at said determined pressure;

at least a pair of motors each including a piston-cylinder assemblage cooperating to define a pair of working chambers of unequal effective area expanding and contracting in opposition in response to movement of said piston member thereof, and a pair of synchronizing chambers all expanding and contracting equally in opposition as said piston member moves, each of said motors further including flow path means interconnecting each one of said pair of working chambers individually with the one of said pair of synchronizing chambers expanding and contracting in opposition thereto, and valve means closing fluid flow in said flow path means in both directions and allowing fluid flow therein only in a direction toward the power chamber having the greater area of said pair of power chambers from the communicating synchronizing chamber, and from the other of said pair of power chambers toward the other of said pair of synchronizing chambers in a singular position of said piston members;

a first conduit interconnecting said working chambers of greater effective area of each of said motors and communicating with said first port;

a second conduit interconnecting said working chambers of lesser effective area of each of said motors and communicating with said second port;

a third conduit interconnecting a synchronizing chamber of one of said motors which expands in response to movement of the respective piston member in a selected direction with a synchronizing chamber of another motor contracting in response to movement of the respective piston member thereof in said selected direction; and

a fourth conduit interconnecting the other synchronizing chamber of said one motor with a synchronizing chamber of another motor expanding in response to movement of the respective piston member thereof in said selected direction.

20. A fluid pressure motor comprising:

a piston-housing assemblage including means for defining a pair of power chambers of unequal area and a pair of synchronizing chambers of equal area, each individual pair of chambers expanding and contracting in opposition in response to relative movement of a piston member and a housing member of said assemblage, first flow path means communicating one of said pair of power chambers individually to the one of said pair of synchronizing chambers expanding and contracting in opposition thereto, and second flow path means connecting the other of said pair of power chambers individually with the other of said pair of synchronizing chambers, first and second valve means respectively disposed in said first and second flow path means for closing fluid flow therethrough in both directions and for allowing fluid flow therein only in a singular position of said piston member relative to said housing member.

21. In an aircraft having a jet propulsion engine, a thrust reverser element in association with said engine for reversing the direction of thrust provided by said engine, and a liquid pressure responsive actuator moving said thrust reverser element between a stowed position and a deployed thrust reversing position, said actuator comprising a pair of liquid pressure responsive motors, each one of said pair of motors including a respective output member movable between a first and a sec-

ond position to move said reverser element respectively between said stowed and deployed positions, flow path means communicating said pair of motors, fluid pressure source means communicating with each one of said pair of motors, said pair of motors including valve means opening only when both of said output members occupy said first position for allowing fluid flow from said source through said pair of motors and to said source, said actuator including said pair of liquid pressure responsive motors moving in substantial synchronization between said first and a second position to move said thrust reverser element respectively between said stowed and said deployed positions, each one of said pair of motors defining a variable-volume chamber receiving pressurized liquid from a source thereof to move said actuator, said variable-volume chambers being capable also of receiving gaseous fluid, and purging means for so communicating said pair of variable-volume chambers with said source of pressurized liquid so as to substantially remove said gaseous fluid from said pairs of chambers to said liquid source, said purging means further including means for moving each one of said pair of motors to one of said first and second position, in response to a flow of pressurized liquid from said source, said actuator including pressure responsive retaining means for securing said actuator in one of said first and second positions, said retaining means being responsive to a flow of pressurized liquid from said source to release said actuator from said one position, said purging means further cooperating with said actuator to substantially define a closed volume trapping therein a determined quantity of pressurized liquid from said source, said trapped liquid moving between said pair of motors in response to movement of the latter between said first and second positions, and volume compensation means cooperating with the remainder of said actuator to define said closed volume, said volume compensation means comprising apparatus for displacing pressurized liquid from a storage location thereof into said trapped liquid in response to a flow of pressurized liquid from said source thereof.

22. The method of synchronizing movement of a pair of hydraulic motors, each motor comprising a pair of power chambers of unequal effective area and a pair of equal effective area synchronizing chambers, the chambers of each pair of chambers expanding and contracting in opposition in response to operation of the respective motor, said method comprising the steps of providing flow path means communicating each synchronizing chamber individually with the power chamber of the respective motor expanding and contracting in opposition thereto; and flowing fluid through said pair of motors in a first direction sequentially from a source thereof through a synchronizing chamber and the power chamber of greater effective area communicating therewith and to said source, and from said source sequentially through the other of said pair of power chambers and the other of said pair of synchronizing chambers and to said source; and employing said fluid flow in said first direction through said pair of motors to purge gaseous fluid therefrom to said source, further including the steps of discontinuing fluid flow in said first direction from said power chambers of greater effective area to said source, while continuing fluid flow in said first direction from said source through said other power chambers to said other synchronizing chambers, and utilizing said continuing fluid flow to compress gaseous fluid (if any) within said pair of motors and filling the volume by which said gaseous fluid is compressed with incompressible fluid.

4,585,173

PRESSURE ACTIVATED CONICAL SPRAY NOZZLE

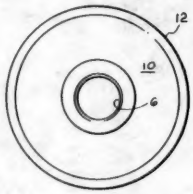
Lincoln S. Soule, Wendell, Mass., assignor to Bete Fog Nozzle, Inc., Greenfield, Mass.

Filed Mar. 18, 1985, Ser. No. 712,841

Int. Cl.[4] A62C *35/00*; B05B *1/06*

U.S. Cl. 239—453 **7 Claims**

1. Liquid spray fire fighting nozzle for stationary installation having a liquid inlet opening and discharge opening comprising a generally cylindrical barrel, a liquid carrying conduit coaxially disposed within said barrel and extending from the inlet to the discharge opening of the nozzle, said conduit being axially movably disposed within the barrel, a piston carried adjacent one end of the conduit has its peripheral edge sealed for movement within the barrel, a helical opening being provided adjacent the discharge end of the conduit and means



disposed within the barrel for releasably urging the conduit toward the inlet opening of the nozzle, said piston being axially movable a predetermined stroke distance, the helical opening being disposed so that movement of the piston in response to pressurized liquid flow entering the inlet opening of the nozzle will result in the helical opening being extended beyond the discharge end of the barrel to provide a conical liquid spray.

4,585,174

ELECTRO-MAGNETICALLY OPERABLE VALVE

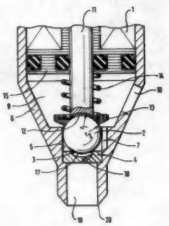
Heinrich Knapp, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1984, Ser. No. 584,353

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1983, 3312067

Int. Cl.[4] F02M *47/02*

U.S. Cl. 239—533.8 **1 Claim**



1. An electro-magnetically operable fuel injection valve for a fuel injection device of an internal combustion engine, said injection valve having a valve housing, a guide bore, a fixed valve seat in said guide bore, a core of ferro-magnetic material and a ball, said ball cooperating as a movable valve part with said fixed valve seat, said guide bore forming a guide for said ball, said ball being of a soft magnetic material and, during excitation of the magnetic core, being moved away from the valve seat and against a concavely formed stop face of the core, and the radius (r_1) of the concavely formed stop face of the core being larger by about 0.1 to 1 mm than the radius (r_2) of the ball.

4,585,175

FLUID FLOW CONTROL IN FLOW LINE BRANCH

Paul J. Formentos, Folsom, Pa., assignor to Speakman Company, Wilmington, Del.

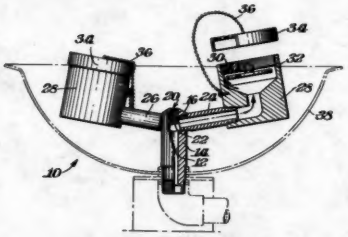
Filed Jun. 25, 1984, Ser. No. 624,353

Int. Cl.[4] E03B *9/20*; F16K *1/02*

U.S. Cl. 239—553 **11 Claims**

1. In a fluid flow device having an internal flow passageway

including a single supply line connected to two discharge ports, the improvement according to which an adjustable volumetric control and balancing element is positioned in the flow passageway at the juncture of the supply line and the two discharge ports, a rotatable connection between the volumetric control and balancing element and the fluid flow device enabling the element to rotate about an axis of rotation, the element including a beveled end face in the flow passageway



inclined with respect to the axis of rotation of the element and the flow from the supply line for selectively directing fluid from the supply line to the discharge ports, and means for rotating the element to thereby change the position of the beveled end face relative to the discharge ports whereby fluid from the supply line impinges upon the beveled end face and is selectively directed to the discharge ports to thereby control and balance the flow of fluid directed to the discharge ports.

4,585,176

ELECTROMAGNETICALLY ACTUATABLE VALVE

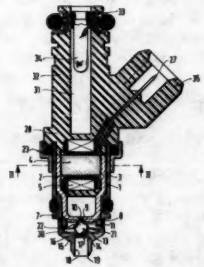
Hans Kubach, Korntal-Münchingen, and Asta Hascher-Reichl, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 16, 1984, Ser. No. 631,040

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3336010

Int. Cl.⁴ B05B *1/30;* F16K *31/02*

U.S. Cl. 239—585 **8 Claims**



1. An electromagnetically actuatable valve for fuel injection systems of internal combustion engines, comprising a ferromagnetic core and a magnetic coil supported in a valve housing arranged to actuate an armature-valve member adapted to cooperate with a fixed valve seat, said armature-valve member further arranged to move away from said valve seat toward said core counter to the force of a restoring diaphragm when the magnetic coil is excited,

said core further including:

a yoke which bears said magnetic coil,

a first pole piece disposed on one end of said yoke, and

a second pole piece disposed on the other end of said yoke, and further wherein said first pole piece has a first pole on its end remote from said yoke, and said second pole piece has a second pole on its end remote from said yoke;

and said first pole and said second pole are arranged to extend toward one another and define a gap therebetween, and said pole pieces being respectively provided with a concave area which extends equally over both said pole pieces and oriented toward the armature-valve member.

4,585,177

FLUID DEFLECTING ASSEMBLY

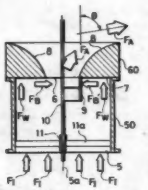
Norio Sugawara, and Motoyuki Nawa, both of Nara, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 26, 1984, Ser. No. 634,712

Claims priority, application Japan, Jul. 26, 1983, 58-136995; Aug. 11, 1983, 58-147723; Jan. 25, 1984, 59-12319; Apr. 9, 1984, 59-70271

Int. Cl.⁴ B60H *1/34;* F24F *7/00*

U.S. Cl. 239—590 **14 Claims**



1. A fluid deflecting assembly comprising:

a tubular body having a flow passage for passing therethrough a fluid flow along the axis of said tubular body;

a nozzle body mounted on said tubular body and having a nozzle opening disposed downstream of said flow passage in a direction of the fluid flow, a restriction surface located downstream of said flow passage and surrounding said nozzle opening around said axis, and a guide wall surface extending downstream of said nozzle opening and flaring radially outwardly from said nozzle opening in surrounding relation thereto; and

a bias flow shield disposed in said flow passage upstream of said nozzle opening, said bias flow shield having a peripheral edge contoured substantially identically to a portion of a peripheral edge of said nozzle opening for adjustably blocking a portion of a bias fluid flow directed by said restriction surface toward said nozzle opening, said bias flow shield being movable along said peripheral edge of said nozzle opening and in an axial direction of said flow passage.

4,585,178

COAL CAR THAWING SYSTEM

Allan H. Arzt, 4310 Mary Ave., Baltimore, Md. 21206

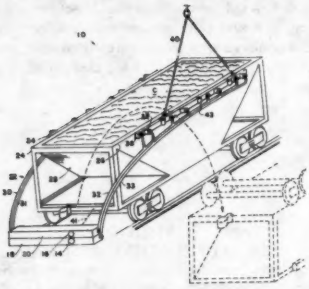
Filed May 19, 1981, Ser. No. 265,061

Int. Cl.⁴ B02C *11/08, 21/00*

U.S. Cl. 241—23 **15 Claims**

1. A system for discharging a load of coal frozen at an icy interface to a railroad car such as a gondola, comprising: means

for passing current through a said gondola along a path melting said ice at the interface; and means for inverting said gondola



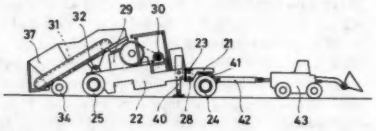
and discharging a said load of coal therefrom as result of melting of said icy interface.

4,585,179

PORTABLE CRUSHER

Yoshihiro Tsuji, Kaizuka; Fumio Fujihara, Neyagawa, and Yoichi Nishikawa, Uji, all of Japan, assignors to Kurimoto Ltd., Osaka, Japan

Filed May 31, 1984, Ser. No. 615,536
Claims priority, application Japan, Jun. 2, 1983, 58-98882
Int. Cl.[4] B02C *21/02*
U.S. Cl. 241—101.7 **2 Claims**



1. A movable crushing apparatus comprising:

a first skid having a pair of wheels and also having at least one pin hole at a rear end thereof;

a second skid having a pair of wheels and also having at least one pin hole at a front end thereof;

a crusher fixedly mounted on the second skid;

means, pivotally mounted on the second skid, for receiving material at a rear end and for feeding said material at a front end to the crusher;

lock pin means, inserted into the at least one pin hole at the rear end of the first skid and also simultaneously into the at least one pin hole at the front end of the second skid, for coupling the first skid and the second skid fixedly together end-to-end when moving the entire apparatus from one location to another;

first jack means, connected to one of the first and second skids, for elevating the rear end of the first skid and the front end of the second skid off the ground to allow coupling of the first skid and the second skid fixedly together end-to-end and to move said crusher into an inoperative position; and

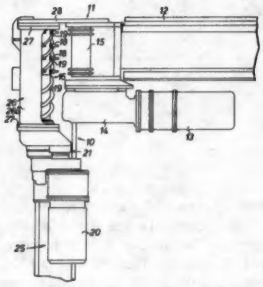
second jack means, connected to the receiving and feeding means, for elevating the rear end of said receiving and means off the ground into an operative position feeding.

4,585,180

MINERAL BREAKERS

Alan Potts, "Geneina", No. 1 Chaple Lane, Ravenshead, Nottingham, England

Continuation of Ser. No. 212,132, Dec. 2, 1980, abandoned. This application Jun. 29, 1984, Ser. No. 626,139
Int. Cl.[4] B02L *13/20*
U.S. Cl. 241—186 A **13 Claims**



1. A mineral breaker for breaking lumps of material of a predetermined size and of a larger size, said mineral breaker being located to receive the lumps of material from a first conveyor having a first direction of travel and terminating at a delivery end and for permitting lumps of material of less than the predetermined size to drop vertically upon a second conveyor disposed beneath said mineral breaker and having a second direction of travel, said mineral breaker comprising in combination:

(a) a breaker drum axially aligned generally transverse to the first direction of travel, said mineral breaker being disposed at and spaced from the delivery end of the first conveyor for breaking lumps of material of the predetermined size and larger and bridging the space between said breaker drum and the delivery end and for permitting lumps of material smaller than the predetermined size to pass vertically downwardly through the space between the delivery end and said breaker drum which space is aligned with the axis of said breaker drum and drop onto the second conveyor in response to the force of gravity;

(b) a casing partially surrounding said breaker drum, said casing defining a void for permitting ingress of the lumps of material from the first conveyor into proximity with said breaker drum and a further void for permitting egress of the lumps of material vertically in response to the force of gravity on to the second conveyor, said further void being formed in said casing to obtain alignment of said further void with the direction of travel of said second conveyor;

(c) a plurality of picks extending from said breaker drum for breaking the lumps of material bridging the space between said breaker drum and the delivery end of the first conveyor;

(d) means for transporting axially along said breaker drum substantially only the lumps of material of the predetermined size and larger received from the first conveyor and only for as long as the lumps of material remain the predetermined size and larger; and

(e) means for urging rotation of said breaker drum.

4,585,181
YARN TRAVERSE APPARATUS

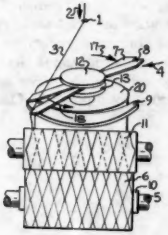
Heinz Schippers; Erich Lenk, both of Remscheid; Herbert Schiminski, Huckeswagen, and Herbert Turk, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 694,952, Jan. 25, 1985, Pat. No. 4,561,603. This application Jun. 14, 1985, Ser. No. 745,273

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1984, 3422529; Aug. 30, 1984, 3431838

Int. Cl.[4] B65H *54/28*

U.S. Cl. 242—43 A 8 Claims



1. In a yarn winding apparatus comprising a spindle adapted to coaxially mount a tubular yarn bobbin, drive means for rotating the yarn bobbin and a yarn package being formed thereon, first yarn traverse means comprising a guide rail extending in a direction generally parallel to the axis of said spindle and a pair of guide arms mounted for rotation in opposite directions about closely adjacent or coaxial axes and so that the rotating arms define closely adjacent parallel planes and the extremity of each rotating arm is adapted to pass through the running yarn path of travel and along the guide rail and so as to reciprocate the yarn along a guide stroke, and second yarn traverse means comprising a guide roller mounted between said first yarn traverse means and said spindle and generally parallel to the axis of said spindle, said guide roller having grooves formed in the surface thereof for guiding the running yarn onto a yarn bobbin mounted on said spindle and while traversing the yarn along a traverse stroke to form a cross wound yarn package, the improvement wherein said first yarn traverse means is constructed and arranged such that said guide stroke extends beyond each of the ends of said traverse stroke defined by said guide roller.

4,585,182
TIME MEASURING DEVICE FOR A FISHING REEL

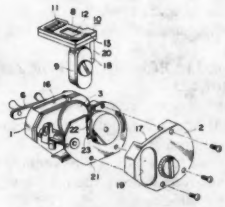
Takashi Atobe, Tokyo, Japan, assignor to Daiwa Seiko Inc., Tokyo, Japan

Filed Dec. 28, 1984, Ser. No. 687,556

Claims priority, application Japan, Jan. 25, 1984, 59-8693[U]

Int. Cl.[4] A01K *89/015*

U.S. Cl. 242—84.1 M 3 Claims



1. In a double-bearing fishing reel having a spool shaft with a spool secured thereto, the spool shaft being supported between a pair of right and left reel side plates; a handle shaft rotatably supported by one of said reel side plates, the handle shaft and said spool shaft being connected together through a power transmission mechanism and a clutch mechanism, which are provided in said one reel side plate; and a level-wind device provided forward of said spool, the level-wind device being adapted to guide a fishing line to said spool, an improvement comprising:

an informing mechanism for informing the angler of the amount of the fishing line that has been let out, the informing mechanism being composed of a detector which detects the number of revolutions of said spool and the direction of rotation thereof, a display, an operation key, a microcomputer, and a power source; and

a waterproof housing which houses said informing mechanism, the housing being supported between said right and left reel side plates and located forward of a fishing line winding portion of said spool and above said level-wind device, and said detector being disposed a minute distance apart from, and spacing, a transmitter member disposed on a flange of said spool.

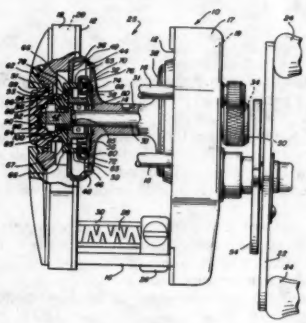
4,585,183
BACKLASH CONTROL DEVICE FOR MAGNETIC BAIT CAST REEL

John W. Puryear, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 2, 1984, Ser. No. 667,711

Int. Cl.[4] A01K *89/02*

U.S. Cl. 242—84.52 B 15 Claims



1. An improved bait casting reel of the type having a fixed frame, a line-carrying spool mounted for rotation relative to the fixed frame, an operating handle to effect rotation of the spool and thereby retrieve fishing line that is paid out and means for releasing the spool so that the line can pay out from the spool as during casting, the improvement comprising:

a first damping member fixed against rotation relative to the frame;

means associated with the first damping member for establishing a magnetic field in an air gap adjacent the first damping member and comprising first and second spaced apart magnetic field producing elements;

a second damping member fixed against rotation relative to the line-carrying spool and having at least a portion extending into the magnetic field in the air gap,

whereupon rotation of the line-carrying spool causes relative rotational movement between the first and second damping members and movement of said damping member portion in the magnetic field so that eddy currents are set up, producing a damping force tending to slow down the rotation of the line-carrying spool; and

a plurality of elongate fibers attached to at least one of either the first or second damping member, extending into the

magnetic field in the air gap, movable directly between the first and second field producing elements as the reel is operated and disrupting air flow within the gap.

said fibers, by disrupting the air flow, enhancing rotational damping of the line-carrying spool so that the likelihood of backlash and overrunning of the spool during casting is substantially diminished.

4,585,184

WEBBING TENSION DEVICE

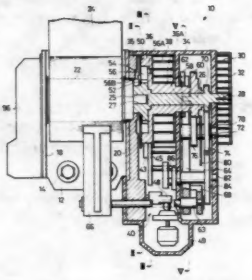
Teruhiko Kawaguchi; Akinori Fujiwara, and Yuji Nishimura, all of Aichi, Japan, assignors to Kabushiki Kaisha Toka-rika-denki-seisakusho, Aichi, Japan

Filed Jul. 26, 1984, Ser. No. 634,787

Claims priority, application Japan, Jul. 27, 1983, 58-137254

Int. Cl.[4] B65H *75/48;* B60R *22/46*

U.S. Cl. 242—107 **21 Claims**



1. A webbing tension device adapted for use in a webbing retractor for protecting an occupant in an emergency situation of a vehicle, which comprises:

(a) small resilient means for biasing a webbing takeup shaft secured thereto with one end portion of an occupant restraining webbing and supported rotatably to the webbing retractor weakly in a direction of a webbing retraction;

(b) large resilient means for biasing the takeup shaft in the direction of the webbing retraction strongly in the emergency situation of the vehicle;

(c) first clutch means disposed between the takeup shaft and the large resilient means for connecting them to each other when the webbing is fully retracted on to the takeup shaft after the vehicle is released from the emergency situation,

whereby when the takeup shaft is rotated in an unwinding direction of the webbing after the webbing is fully retracted on to the takeup shaft, the large resilient means is wound up to be returned back to its initial situation.

4,585,185

RETRACTOR

Takeo Ueda, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Nov. 30, 1983, Ser. No. 556,349

Claims priority, application Japan, Dec. 8, 1982, 57-184764[U]

Int. Cl.[4] B65H *75/48*

U.S. Cl. 242—107 **8 Claims**

1. A retractor provided with a take-up force reducing device, comprising:

a base;

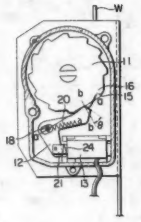
a webbing take-up shaft rotatably supported in said base;

biasing means for biasing said take-up shaft in a webbing take-up direction, said biasing means including first and second portions;

a connecting member for connecting said first and second portions of said biasing means, said connecting member being connected to said take-up shaft through said first portion and being connected to said base through said second portion;

a single-piece, rigid locking member, the entire locking member being selectively pivotable about a first axis means fixed to said base and selectively pivotable about a second axis means and having an engaging portion;

control means for controlling said locking member, said control means being pivotally coupled to said locking member through said second axis means so that said control means rotates the entire locking member about said first axis means, by moving said second axis means, between a locking position in which said engaging portion is engaged with said connecting member to prevent said connecting member from rotating in the take-up direction together with said take-up shaft, so as to prevent the biasing force of said second portion of said biasing means



from acting on said take-up shaft, and a non-locking position in which said engaging portion is disengaged from said connecting member to allow the rotation of said connecting member together with said take-up shaft, so as to permit the biasing forces of both of said first and second portions of said biasing means to act on said take-up shaft;

first means for allowing the entire locking member to rotate about said second axis means in such a direction that said engaging portion may move toward a disengaging condition, in which said engaging portion is disengaged from said connecting member, to allow the rotation of said connecting member together with said take-up shaft in a webbing draw-out direction even when the locking member is in said locking position; and

second means for causing the entire locking member to rotate about said first axis means between said locking position and said non-locking position when said second axis means is moved by said control means.

4,585,186

WEBBING RETRACTOR

Shingo Izuchi; Toshimasa Yamamoto, and Shinji Mori, all of Niwa, Japan, assignors to Kabushiki Kaisha Toka-rika-denki-seisakusho, Aichi, Japan

Filed Sep. 25, 1984, Ser. No. 654,311

Claims priority, application Japan, Sep. 26, 1983, 58-148314[U]

Int. Cl.[4] B65H *75/48;* B60R *22/34*

U.S. Cl. 242—107.4 D **9 Claims**

1. A webbing retractor retracting an occupant restraining webbing therein, adapted for use in a seatbelt system for a vehicle, which comprises:

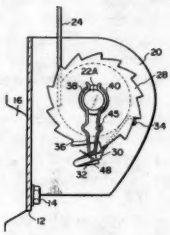
(a) a takeup shaft for winding the webbing thereon;

(b) resilient means for biasing the takeup shaft in a direction of a webbing winding;

(c) locking means capable of being put in a locked situation where the takeup shaft is prevented from rotation in a direction of a webbing unwinding when the occupant wears the webbing;

(d) diameter sensing means for putting the locking means in a released situation where the takeup shaft can be rotated in the directions of the webbing winding and unwinding when the webbing is wound on the takeup shaft by a predetermined amount, said diameter sensing means comprising a sensing arm caused to abut on an outer peripheral face of a roll of the webbing which has been retracted on the takeup shaft to be moved in accordance with an increase and a decrease in a diameter of the roll of the webbing;

(e) a spring member formed with a pair of legs which resiliently clips the takeup shaft and thereby rotates together with the takeup shaft by a frictional force between the takeup shaft and the spring member, the spring member being put in a first position where the locking means is kept in the released situation when it is rotated in the direction of the webbing unwinding and the spring member being put in a second position where the locking means can be put in the locked situation when it is rotated in the direction of the webbing winding, the locking means comprising a ratchet wheel fixed to the takeup shaft coaxially therewith and a pawl opposed to the ratchet wheel and fixed thereto with the sensing arm to be moved in accordance with the movement of the sensing arm, the



pawl being caused to abut on the spring member when the spring member is put in the first position and it being separated from the spring member when the spring member is put in the second position, whereby when the webbing is wound on the takeup shaft by a predetermined amount after it is unwound for restraining the occupant, the pawl is engaged with the ratchet wheel so that the takeup shaft is prevented from rotation in the direction of the webbing unwinding; and

(f) rotation restricting means for restricting a rotation of the spring member within a range between the first position and the second position, the rotation restricting means comprising a pin disposed between the legs of the spring member, whereby, when the takeup shaft is rotated, the spring is caused to abut on the pin so that the spring member is prevented from further rotation in a direction of the rotation of the takeup shaft and the spring member is biased in a direction of enlargement of a distance between the legs so that the frictional force occurring between the takeup shaft and the spring member when the takeup shaft is further rotated is reduced,

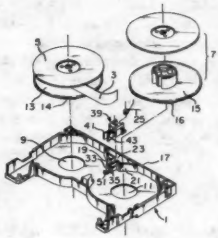
whereby the occupant can be put in the securely restrained situation by the webbing when the webbing is wound on the takeup shaft after the occupant wears the webbing.

4,585,187

MAGNETIC TAPE CASSETTE

Masatoshi Okamura; Haruo Shiba; Kenji Hashizume, and Yoshiya Sakata, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 16, 1985, Ser. No. 691,891
Claims priority, application Japan, Jan. 18, 1984, 59-4205[U]
Int. Cl.[4] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—198 **4 Claims**



1. A magnetic tape cassette comprising a cassette casing and locking means slidable between a locking position of engagement with a pair of reels held in said magnetic tape casing and a releasing position of disengagement from said reels, wherein said locking means includes:

a pair of flexible pawls;

a guide rib fixed to the inner bottom surface of said cassette casing and between said pair of flexible pawls, the width of said guide rib being decreased toward the root of said pair of flexible pawls; and

a pair of guide pins provided at the outside of said pair of flexible pawls,

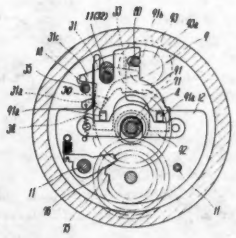
wherein when said locking means is advanced to said locking position, said fiexible pawls are forcibly opened by said guide rib to be engaged with said reels and when said locking means is retracted to said releasing position, said flexible pawls are forcibly closed by said guide pins.

4,585,188

FISHING REEL

Jun Sato, and Hideki Nakajima, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed Sep. 28, 1983, Ser. No. 536,656
Claims priority, application Japan, Oct. 4, 1982, 57-175130
Int. Cl.[4] A01K *89/02*
U.S. Cl. 242—219 **3 Claims**



1. A fishing reel comprising a pair of frames, a spool shaft having a spool supported rotatably between said frames, a drive mechanism having a handle and a drag mechanism for driving said spool shaft upon operation of said handle, a clutch mechanism which transmits a driving force from said drive mechanism to said spool shaft when engaged and for uncou-

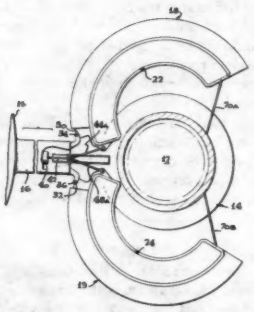
pling the transmission of said driving force when disengaged, a clutch operating mechanism provided with a clutch operating plate for operating to engage and disengage said clutch mechanism, and an interlocking member which is movable together with said clutch operating plate, said reel having an anti-reverse-rotation mechanism provided with a stopper gear fixed to at least one of said spool and spool shaft and a stopper supported to said frame and engageable with said stopper gear to thereby impede reverse rotation of said spool, said anti-reverse-rotation mechanism being provided with a stopper operating member, adapted to engage with and be moved by said interlocking member, when said clutch operating plate moves in a direction of disengaging said clutch mechanism, to cause said stopper to disengage from said stopper gear when said clutch operating plate is operated to disengage said clutch mechanism, and means for moving said stopper operating member to cause said stopper to engage with said stopper gear, when said clutch operating plate is operated to engage said clutch mechanism.

4,585,189

COUNTERBALANCED COWLING ASSEMBLY FOR A PYLON-MOUNTED ENGINE AND NACELLE THEREFOR

John A. Buxton, Westminister, Calif., assignor to Lockheed Corporation, Burbank, Calif.

Filed Oct. 22, 1984, Ser. No. 663,660
Int. Cl.[4] B64D *27/00*
U.S. Cl. 244—54 **7 Claims**



1. A counterbalanced bifurcated cowling assembly for a pylon-mounted engine and nacelle therefor, the pylon extending horizontally from the fuselage of an aircraft comprising:

a first cowling section pivotally mounted to the pylon and rotatable from a closed position extending partially about the top of the engine to an open position above the engine;

a second cowling section pivotally mounted to the pylon and rotatable from a closed position extending partially about the underside of the engine to an open position extending downward from the engine;

an actuator at least partially mounted within the pylon, said actuator having an output drive shaft;

at least one first link having first and second ends, said first end of said at least one first link pivotally attached to said output drive shaft and said second end of said at least one first link pivotally attached to said first cowling section; and

at least one second link having first and second ends, said first end of said second link pivotally attached to said output shaft and said second end of said at least one second link pivotally attached to said second cowling section;

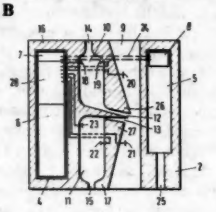
such that upon the extension of the output drive shaft, the first and second cowling sections are rotated upward and downward, respectively, with their respective weights counteracting each other during movement from the closed position to the open position.

4,585,190

WATER ACTIVATED PRESSURIZED GAS APPARATUS FOR RESCUE APPLICATIONS

Holger Hansen, Hamburg, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Nov. 20, 1984, Ser. No. 673,958
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1983, 3342097
Int. Cl.[4] B64D *17/38*
U.S. Cl. 244—151 B **9 Claims**



1. A compressed-gas device for the life-saving services which can be activated by water, more especially an automatic separating coupling for parachutes, and which is provided with a chamber, into which water can enter through openings, and which comprises electrodes, upon whose bridging with water the compressed gas is activated via an electric circuit, characterised in that it comprises a channel (9) which extends from a first surface (16) of the device to a second opposite surface (17) through the device, and in that it comprises a first detector chamber (10) which is connected to the first surface (16) by an opening (14) and to the channel (9) by another opening (12), and in that it comprises a second detector chamber (11) which is arranged between the first detector chamber (10) and the second surface (17) and which is connected to the second surface (17) by an opening (15) and to the channel (9) by another opening (13), the channel (9) and each of the detector chambers (10, 11) containing two electrodes (18, 19; 20, 21; 22, 23) which can be bridged by water and which are so connected that the activation of the compressed gas is effected upon the bridging of all three pairs of electrodes.

4,585,191

PROPULSION APPARATUS AND METHOD USING BOIL-OFF GAS FROM A CRYOGENIC LIQUID

Dale H. Blount, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 14, 1983, Ser. No. 561,432
Int. Cl.[4] B64G *1/26*
U.S. Cl. 244—169 **20 Claims**

1. An attitude control propulsion apparatus for controlling the attitude of a vehicle orbiting in space comprising:

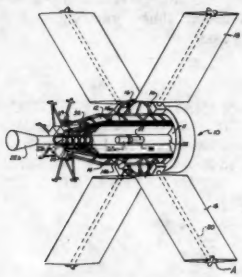
a cryogenic liquid container adapted to be carried by a vehicle for containing a cryogenic liquid, said cryogenic liquid container having a vent means for boil-off of gas from said liquid due to external heat input;

thruster means adapted to be carried by said vehicle for producing thrust forces in a desired direction;

a supply line for delivering said boil-off gas from said vent means to said thruster means;

temperature control means for controlling the temperature of said cryogenic liquid within prescribed upper and lower limits so that adequate propellant is provided by

said boil-off gas for producing said desired thrust forces; and for maintaining a coolant temperature of an experiment package cooled by said cryogenic temperature; and means for controlling said thruster means.



4,585,192

LEADING EDGE ARRANGEMENTS FOR AIRCRAFT WINGS

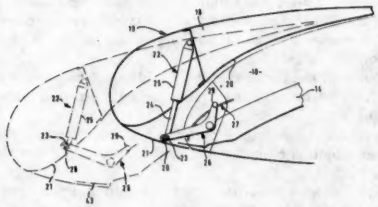
John B. Clifford-Jones, Hatfield, England, assignor to British Aerospace Public Limited Company, London, England

Filed Mar. 30, 1984, Ser. No. 595,358

Claims priority, application United Kingdom, Mar. 30, 1983, 8308821

Int. Cl.⁴ B64C *3/50*

U.S. Cl. 244—214 **8 Claims**



1. A leading edge arrangement for an aircraft wing, which includes

a fixed wing portion;

a slat member arranged forwardly of the fixed wing portion;

an arm member supporting said slat member and being slidably mounted with respect to said fixed wing portion for movement between a retracted position in which the slat member lies adjacent the fixed wing portion and an extended position in which a slot is defined therebetween;

a resiliently flexible panel portion extending rearwardly from a lower edge region of the slat member, and

panel profile control means including link means pivotally mounted on said arm member and coupled to said panel portion, cam means provided on said link means co-operable with cam track means provided in the fixed wing portion to control movement of said panel portion on extension and retraction movement of said arm member,

the arrangement being configured such that when the arm member is in its retracted position the panel portion defines a generally smooth intermediate lower surface bridging the fixed wing portion and the slat member, but when the arm member is in its extended position the panel portion is caused to adopt a folded position in which, together with further surface regions of the slat member it defines a generally smooth forward wall region for said slot.

4,585,193

DEVICE FOR THE ANTIBACKLASH DISPLACEMENT OF OBJECTS IN A COORDINATE SYSTEM

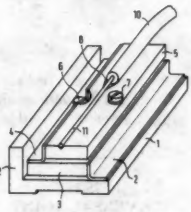
Rolf Rossberg, Schwieberdingen, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 5, 1984, Ser. No. 617,418

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3321988

Int. Cl.⁴ F16L *3/00*

U.S. Cl. 248—49 **2 Claims**



1. Device for the antibacklash displacement of objects in a coordinate system with at least two displacement paths, e.g. for aligning the end faces or the longitudinal axes o optoelectronic components and/or optical fibers, in which the object to be positioned is capable of being moved about the axis of a first swivel member with the aid of adjusting screws, with said swivel member, in turn, capable of being moved about the staggered axis of a second swivel member resting on a support, wherein the support and the swivel members consist of three plates which are spaced from one another and hingedly connected to each other, with said plates forming a baseplate (1), an intermediate plate (3) and a supporting plate (5), with said baseplate (1) being connected to said intermediate plate (3) as disposed thereabove, via a first hinge (2) provided for within the area of one longitudinal side, with said intermediate plate (3), within the area of the longitudinal side lying opposite said first hinge (2) being connected to said supporting plate (5) disposed thereabove, via a second hinge (4), and that said intermediate plate and said supporting plate (3, 5), for performing the swivel movements, are capable of being actuated by one adjusting screw each (6, 7) which are respectively disposed within the area of the longitudinal sides lying opposite said hinges (2, 4) and wherein a baseplate (14) with a cylindrical rod (15) mounted thereto by lying along one longitudinal edge, with the aid of at least one spring element (16) secured to said rod (15) which, when the plug-and-socket connector is inserted, presses upon the vertical leg (12) thereof, and by at least one spring element (17) which is secured to said baseplate (14) and, when the plug-and-socket connector is inserted, is pressed against the upper free longitudinal edge of the leg lying on said baseplate (14).

4,585,194

RETRACTABLE WINDER FOR STORING THE POWER CORD OF AN ELECTRIC FLAT-IRON AND AN ELECTRIC FLAT-IRON EQUIPPED WITH A WINDER OF THIS TYPE

Pierre Schwob, Lyons, France, assignor to SEB S.A., Selongey, France

Filed Jan. 12, 1984, Ser. No. 570,197

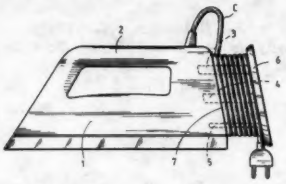
Claims priority, application France, Jan. 19, 1983, 83 00765

Int. Cl.⁴ F16L *3/00*

U.S. Cl. 248—52 **7 Claims**

1. A retractable winder for storing a power cord of an electric flat-iron having a sole plate secured to a casing covering said sole plate, said winder comprising a first retaining member consisting of a retaining plate (6) to which is rigidly fixed a series of cord-supporting arms (3, 4, 5) projecting from said

retaining plate, a second retaining member constituted by a rear wall (7) of said casing, said second retaining member being provided with guide holes (13, 14, 15) in which said cord supporting arms are slidably engaged, and an elastic traction



means (8) located between said cord-supporting arms and connected to said first and second retaining members for urging said first retaining member toward said second retaining member.

4,585,195

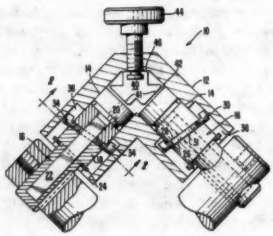
UNIVERSAL JOINT

Joseph T. McFadden, 1010 Llewllyn Mews, Norfolk, Va. 23508

Filed Feb. 23, 1984, Ser. No. 582,775

Int. Cl.[4] F16B *1/04*

U.S. Cl. 248—118 **9 Claims**



5. In a headrest for precisely and adjustably positioning and restraining a person's head, said headrest having a headpiece for supporting and restraining a person's head, attachment means for attaching the headrest to a support base, and a plurality of adjustable shafts interconnecting said headpiece and said attachment means, wherein the improvement comprises at least one universal joint interconnecting said adjustable shafts, said universal joint comprising:

a housing having a plurality of axial bores;

a shaft within each of said plurality of axial bores and each of said shafts rotatable within its respective bore, said shafts having a first part and a second part, said first part and said second part each retained on a central axial, elongated member, said first part and said second part having complementary angled facing end surfaces;

a plurality of key elements interposed between said facing end surfaces of said first and second parts of each of said shafts, each of said key elements having anti-rotation means for restraining said key element against rotation about said central, axial, elongated member;

a spacer element disposed in abutting relationship with each respective second part at an end thereof remote from said angled facing end; and

actuating means mounted on said housing for applying an axial force to said shafts, said key elements and said spacer elements and thus locking said joint in a fixed position, wherein said actuating means comprises a wedge member engaging an axial end surface of each of said spacer elements and a bolt member threaded into said housing and engaging said wedge member so that as said bolt member is threaded into said housing said bolt member applies a force to said wedge member and said wedge member applies and axial force to each of said shafts through said spacer elements an, as said bolt member is threaded out of said housing, the force on said wedge member and on said shafts is released, thus permitting said shafts to rotate within said axial bores.

4,585,196

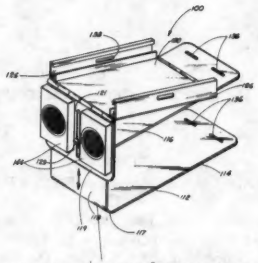
SUPPORT APPARATUS FOR TELEVISIONS FOR USE ON AUTOMOBILE CENTER ARM RESTS

John D. Cormier, 105 Edwis St., Lafayette, La. 70506

Filed Feb. 27, 1984, Ser. No. 583,606

Int. Cl.[4] E04G *5/06*

U.S. Cl. 248—214 **5 Claims**



1. A television support apparatus for use on an automobile front seat or center arm rest utilized for rear seat viewing comprising:

a. a frame shaped to fit over said center arm rest when in its horizontal most position and having an upper horizontal portion, a lower horizontal portion and a vertical portion;

b. said vertical portion integrally affixed at opposite ends to the rearward ends of said upper and lower horizontal portions of said frame;

c. means at the forward ends of said upper and lower horizontal portions of said frame for securing said frame to said center arm rest;

d. a platform whereon a portable television may be placed and which is hingedly attached to said upper horizontal portion;

e. means to secure a portable television to said platform; and

f. means slidably attached to the vertical portion of said frame adapted to set the horizontal position of said platform.

4,585,197

SWIVEL BASE ASSEMBLY

James P. Liautaud, Cary; John K. Westberg, II, and Peter F. Stultz, both of Elgin, all of Ill., assignors to James P. Liautaud, Cary, Ill.

Filed Sep. 6, 1983, Ser. No. 529,958

Int. Cl.[4] F16M *11/14*

U.S. Cl. 248—349 **8 Claims**

1. A swivel base assembly for mounting electronic apparatus or the like on a supporting surface, comprising:

a deformable spacer element; of generally spherical exterior

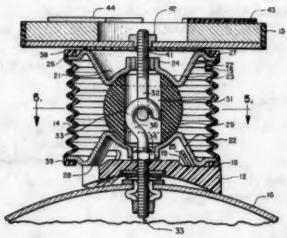
a first plate adapted to engage having a surface mating with the exterior said spacer element from one side thereof and being angularly adjustable therewith, said first plate including means for receiving said apparatus in supporting relationship;

a second plate adapted to engage said spacer element from the other side thereof and being angularly adjustable therewith, said second plate including means for attachment to said supporting surface;

retaining means for retaining said first and second plates in operative engagement with said spacer element whereby said plates are movable with respect to each other; an

apparatus supporting means carried by said retaining means and disposed above said first plate

locking means including rotatable, axial adjusting means on said apparatus supporting means cooperating with said retaining means, said adjusting means being responsive to rotation of said apparatus supporting means relative to said second plates for drawing said first and second plates into compressive engagement with said spacer element



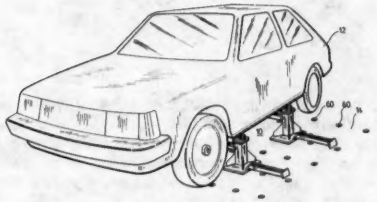
upon rotation of said apparatus supporting means in a predetermined direction, and for releasing said first and second plates from said compressive engagement with said spacer element upon rotation of said apparatus supporting means; first plate in the opposite direction whereby said plates are fixedly positioned relative to each other and to said supporting surface when said first and second plates compressively engage said spacer element.

4,585,198

ANCHORING SYSTEM

Guy N. Chartier, West Hill, and John T. Wickmann, Omemee, both of Canada, assignors to Chart Industries Limited, Pickering, Canada

Filed Sep. 2, 1983, Ser. No. 529,034
Claims priority, application Canada, Sep. 13, 1982, 411298
Int. Cl.[4] B21D *1/12*
U.S. Cl. 248—352 **18 Claims**



1. An anchoring apparatus for use in a vehicle anchoring system to positively anch[illegible] vehicle with respect to a base, said apparatus incl[illegible]:

rigid stand means having a base member adapted to engage said base for dispersing loading forces thereto and a support member upstanding a predetermined distance from said base member, said stand means including vehicle securing means positioned on the upper end of said support member and releasably securable with said vehicle for securing said vehicle to said stand means;

stand securing means securable with the base member of said stand means and said base to positively anchor said stand means on said base whereby said stand means does not move and

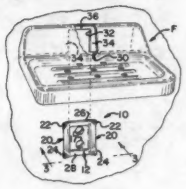
arm support means movably connectable with said support member and extending outwardly of said support member to support the underside of said vehicle to disperse the load of said vehicle.

4,585,199

FIXTURE MOUNTING ARRANGEMENT

John P. Chap, Lemont, Ill., assignor to Selfix, Inc., Chicago, Ill.

Filed May 22, 1984, Ser. No. 611,592
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—359 **8 Claims**



1. An arrangement for mounting a fixture on an associated supporting surface, comprising:

one-piece mounting plate means adapted to be fixedly mounted on said supporting surface, said plate means comprising a centrally disposed mounting portion defining a substantially planar surface positionable in face-to-face relation with said supporting surface, and mounting flange means comprising a pair of mounting flanges extending laterally from respective opposite sides of said mounting portion, said mounting flange means extending laterally generally angularly from a position spaced from said supporting surface toward said supporting surface, each of said mounting flanges including an upper corner portion spaced away from said supporting surface more than the spacing of an adjacent free edge of the respective one of said mounting flanges; and

means defined by said fixture for cooperation with said mounting plate means to effect mounting of said fixture on said supporting surface comprising a substantially vertically oriented retaining portion defining an opening for receiving said mounting portion of said plate means, said retaining portion of said fixture being positionable between said mounting flange means and said supporting surface by relative vertical movement of said fixture with respect to said mounting plate means so that said mounting portion is received in said opening and said retaining portion is held between and in contact with said associated supporting surface and said angularly extending mounting flange means,

said mounting plate means including an upper flange portion extending upwardly from said centrally disposed mounting portion and extending laterally between said mounting flanges in spaced relation to said supporting surface so that said retaining portion of said fixture is positionable between the upper flange portion and said supporting surface.

4,585,200

MOUNTING FOR REMOTELY CONTROLLED REAR-VIEW MIRROR

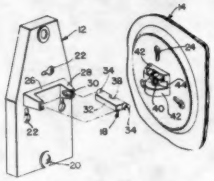
Robert J. Fisher, Livonia, Mich., assignor to Magna International Inc., Ontario, Canada

Filed Jan. 25, 1982, Ser. No. 342,038
Int. Cl.[4] A47G *1/24*
U.S. Cl. 248—487 **2 Claims**

1. In a remotely controlled rear-view mirror of the type mounted for pivotal movement about each of two mutually perpendicular axes under the influence of a remotely positioned manual control lever and a system of tensioned control cables which also hold the interfitting mirror pivot elements in compression, and including a fixed support member adapted to

be fixedly secured to a portion of a vehicle and a mirror support member adapted to have a mirror affixed thereto and to be pivotally mounted to the fixed support member for pivotal movement by the control lever and control cables the ends of which are anchored to the mirror support member, an improvement for suppressing vibration of the mirror and mirror support member which comprises:

a hollow sleeve formed in one of said fixed support member and mirror support member, the axis of which sleeve extends in a direction substantially parallel to the axes of the control cables at their point of connection to the mirror support member, and spring means secured to the other of said fixed support member and mirror support member in a manner to normally prevent any relative movement between said spring means and said other member in a direction parallel to said sleeve axis, said spring means generating resilient forces perpendicular to and against the interior surface of said sleeve, said sleeve axis being substantially displaced from at least one of said pivot system axes, thereby to create frictional drag forces in the direction of said sleeve axis which resist longitudinal movement of said spring along the axis of said sleeve.



4,585,201

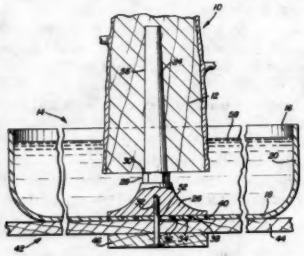
CHRISTMAS TREE STAND

Richard A. Pursell, P.O. Box 321, Heber Springs, Ark. 72543

Filed Jul. 23, 1984, Ser. No. 633,249

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—523 **8 Claims**



1. A Christmas tree stand including an upwardly opening shallow tray constructed of shape-retentative and at least somewhat deformably resilient material, said tray including bottom wall means having an outer periphery, a central area spaced inward of said outer periphery and upper and lower surfaces, said bottom wall including upstanding peripheral wall means extending about and projecting upwardly from the outer periphery of said bottom wall means, an upright post including upper and lower end portions, said lower end portion being diametrically enlarged, of a material harder than that of said tray and including a generally planar undersurface downwardly abutted against said central area of the upper surface of said bottom means, said undersurface including a plurality of generally concentric circular sealing ridges of different diameters projecting slightly downwardly therefrom and forcibly downwardly sealingly seated against and deforming opposing portions of said bottom wall means, elongated headed and threaded shank-type fastener means secured upwardly through said central area and removably threadedly engaged in a suitable downwardly opening threaded bore provided therefor in said lower end portion, the upper end portion of said post projecting upwardly to a level appreciably above said peripheral wall means and being adapted to be upwardly telescoped into a compatible downwardly opening central blind bore formed in the base end of the trunk of a cut tree to be supported from said stand, said post including upwardly facing and outwardly projecting abutment surface means disposed at an elevation above said upper surface and below the upper marginal portion of said peripheral wall means and adapted to be abutted by the portions of said base end disposed about said bore for limiting downward movement of said trank relative to said post, a cross brace-type of base underlying said tray and upwardly through the center of which said fastener means is secured, said cross brace-type of base including a generally planar central area upper surface portion backing the lower surface of said bottom wall means central area from therebeneath.

4,585,202

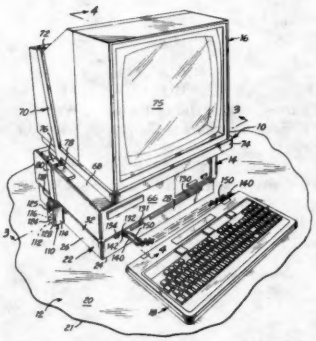
ANTI-THEFT LOCKING DEVICE

Peter M. Parsekian, 16 Fairlawn St., Ho-Ho-Kus, N.J. 07423

Filed May 8, 1985, Ser. No. 731,842

Int. Cl.[4] F16M *13/00*

U.S. Cl. 248—553 **17 Claims**



1. An anti-theft locking device for use primarily in connection with electronic equipment to be secured to a work surface against unauthorized removal, the device engaging the equipment along selected securement areas thereof while enabling access to use areas of the equipment for use of the equipment when secured, the device comprising:

a base frame having basal surfaces for resting upon the work surface, support surfaces spaced above the basal surfaces, and a peripheral wall defining a secure space bounded by the peripheral wall and extending between the basal surfaces and the support surfaces, said support surfaces including support portions complementary to corresponding selected areas of said equipment such that upon placement of the equipment upon the support surfaces of the base frame the corresponding selected securement areas of the equipment will be in a nested position within the peripheral wall, with the peripheral wall precluding movement of the equipment in directions parallel to the work surface;

a hold-down frame for placement over the equipment, the hold-down frame including restraining members generally complementary to further selected securement areas of the equipment while enabling access to said use areas, and at least two depending legs for straddling the equipment

and extending downwardly into juxtaposition with the peripheral wall of the base frame when the hold-down frame is in place over the equipment, each said depending leg including a distal end, and a laterally-extending opening adjacent the distal end of at least one of the depending legs;

a threaded aperture aligned laterally with the opening located adjacent the distal end of said one of the depending legs when the depending legs are juxtaposed with the peripheral wall of the base frame;

a screw-type locking mechanism having a lock housing and a threaded shaft rotatable relative to the lock housing, the screw-type locking mechanism being complementary to the opening adjacent the distal end of said one of the depending legs such that upon engagement of the threaded shaft within said threaded aperture, the screw-type locking mechanism will be seated in said opening to secure the hold-down frame to the base frame, thereby precluding release of the equipment from the nested position in the base frame; and

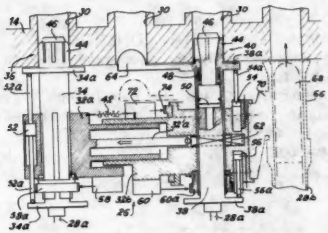
anchoring means on the base frame and located within the secure space for anchoring the base frame to the work surface.

4,585,203

DEVICE FOR POSITIONING A MEMBER FACING EACH OF THE PERFORATIONS OF A PERFORATED PLATE IN ACCORDANCE WITH A GIVEN GRID

Maxime Monne, Paris, and Andrzej Adamowski, Saint Maur, both of France, assignors to Intercontrole Societe Anonyme, Rungis, France

Filed Mar. 25, 1982, Ser. No. 361,865
Claims priority, application France, Apr. 8, 1981, 81 07063
Int. Cl.[4] F16M *13/00*; D25J *15/00*
U.S. Cl. 248—652 **5 Claims**



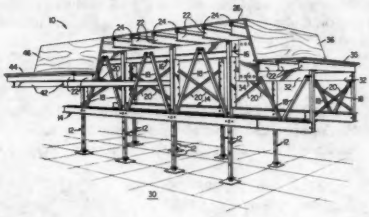
1. A device for positioning a member so that it faces each of a plurality of perforations in a plate, comprising: a body carrying at least two attachment members, means for displacing said attachment members in a direction perpendicular to a perforated plate and independently of one another, so that said attachment members can be selectively introduced into and extracted from any one of a plurality of perforations arranged in said plate in a given grid, means for fixing each of said attachment members in a facing perforation, means for displacing one of said members with respect to the other in a direction parallel to said plate, said body comprising at least two portions, each carrying one of said attachment members, said displacing means comprising means for pivoting said body about each of the attachment members, at least one support carrying another member to be positioned at its free end, and means for rotating said at least one support with respect to said body in order to successively bring said another member opposite to at least two different perforations of said plate without displacing said attachment members, said support being centered on one of said attachment members, and the distance between said another member and said one attachment member being equal to the spacing of the perforations from each other.

4,585,204

CONCRETE FORMING SYSTEM

Lawrence A. Parker, 3233 Colgate, Dallas, Tex. 75225; James W. Keeter, 1111 Dula Cir., Duncanville, Tex. 75116, and Arturo C. Robles, 1417 Bennett, Apt. D, Dallas, Tex. 75206

Filed May 14, 1984, Ser. No. 609,831
Int. Cl.[4] E04G *11/36*
U.S. Cl. 249—28 **9 Claims**



1. In a concrete forming system, the improvement comprising:

a plurality of telescoping jacks each including:

a. an upper portion having a relatively large cross sectional area and having fastener receiving holes formed in the upper and lower ends thereof;

b. a lower portion having a relatively small cross sectional area telescopingly received in the upper portion for selective longitudinal positioning with respect thereto and having a plurality of fastener receiving holes formed therein at equally spaced intervals;

c. A leveling jack mounted on the end of the lower portion of the telescoping jack; and

d. at least one fastener for selective engagement with a fastener receiving hole at the lower end of the upper portion of the telescoping jack and a selected fastener receiving hole of the lower portion of the telescoping jack to fix the positioning of the lower portion relative to the upper portion;

a pair of bottom chords extending between and interconnecting the lower ends of the upper portions of two rows of the telescoping jacks;

a pair of top chords extending between and interconnecting the upper ends of the two rows of telescoping jacks;

said bottom chords and top chords dividing the telescoping jacks into spaced, parallel rows;

a plurality of first brackets each secured to the lower end of the upper portion of one of the telescoping jacks and each having a plurality of fastener receiving holes formed therethrough;

a plurality of diagonal gusset struts each having fastener receiving holes formed through the upper and lower ends thereof;

a plurality of fasteners securing the lower ends of the diagonal gusset struts and the bottom chords to the first brackets of the telescoping jacks;

a plurality of fasteners securing the upper ends of the diagonal gusset struts to the top chords at points substantially displaced from the points of attachment of the telescoping jacks thereto;

a plurality of joists supported on top of the top chords and in turn supporting concrete forming members above the top chords;

a plurality of second brackets each fixedly secured to the upper end of the upper portion of one of the telescoping jacks in each row below the top chords thereof and each having a plurality of fastener receiving holes formed therein arranged in a predetermined vertical array;

a plurality of cross beams having fastener receiving holes formed in the opposite ends thereof;

a plurality of fasteners securing the cross beams to the second brackets at selected locations below the top chords in

adjacent rows, the cross beams in turn supporting concrete forming members below the top chords;

a plurality of telescoping cross braces each comprising an elongate tubular member having fastener receiving holes formed through each end thereof; and

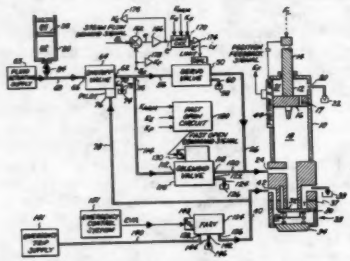
means connecting one end of each cross brace to one of the telescoping jacks at the point adjacent the point of connection of the bottom chord thereto and for connecting the opposite end of the telescoping cross brace to a point on the corresponding telescoping jack of the opposite row at a point adjacent the point of connection of the top chord thereto.

4,585,205

FAST OPENING VALVE APPARATUS

Patrick S. Coppola, and Paul E. Malone, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 13, 1984, Ser. No. 620,351
Int. Cl.[4] F16K *31/363*
U.S. Cl. 251—26 **6 Claims**



1. A fast opening valve means for rapid actuation of a steam valve actuator, said valve actuator responding to hydraulic fluid supplied thereto from a source of hydraulic fluid through a control servo valve, and said valve actuator for positioning a valve stem of a steam valve in accordance with a control error signal supplied to said control servo valve, wherein the control error signal is representative of the difference between a demand control signal and a position feedback signal, the position feedback signal corresponding to the position of said valve actuator, said valve actuator for moving said valve stem to open said steam valve upon increased hydraulic fluid flow being supplied to said valve actuator, the fast opening valve means comprising:

means for generating a fast open command signal when said control error signal exceeds a predetermined reference signal value;

fast valve means hydraulically coupled in parallel with said control servo valve, said fast valve means for opening a supplemental hydraulic fluid supply line between said valve actuator and the source of hydraulic fluid in response to said fast open command signal, wherein the hydraulic attenuation of said control servo valve for a predetermined control position of said control servo valve remains constant regardless of the amount of hydraulic fluid flow in said supplemental hydraulic fluid supply line;

an auxiliary source of hydraulic fluid hydraulically coupled between the source of hydraulic fluid and said control servo valve and said fast valve means, said auxiliary source for substantially maintaining hydraulic fluid pressure upstream said control servo valve and said fast valve means during the opening of said supplemental hydraulic fluid supply line;

means for generating a positional stop command signal when the position feedback signal exceeds a predetermined feedback reference;

means for isolating said fast open command signal from said fast valve means in response to the positional stop command signal, thereby preventing opening the supplemental hydraulic fluid supply line;

means for limiting the control error signal corresponding to a demand control signal for opening the steam valve to a first magnitude; and

means for substituting a second magnitude for said first magnitude when said fast open command signal is generated and during the interval that said positional stop command is not generated, said second magnitude being larger than said first magnitude.

6. A method for regulating an actual steam flow in a steam turbine, said steam turbine including steam flow control means for controlling said actual steam flow and an actuator operatively coupled to said steam flow control means for effecting continuous control of said actual steam flow, said actuator responsive to hydraulic fluid provided thereto, comprising:

supplying hydraulic fluid along a first hydraulic fluid path to said actuator in response to a demanded steam flow; and

supplying hydraulic fluid along a second hydraulic fluid path to said actuator when the actual steam flow is less than the demanded steam flow, wherein said second hydraulic fluid path is in parallel with said first hydraulic fluid path;

limiting the amount of hydraulic fluid supplied along the second hydraulic path in response to a first predetermined magnitude when the actual steam flow is within a first predetermined value of maximum steam flow; and

limiting the amount of hydraulic fluid supplied along the second hydraulic path in response to a second predetermined magnitude when the actual steam flow is within a second predetermined value of maximum steam flow,

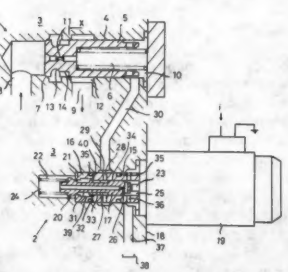
wherein a predetermined flow of hydraulic fluid is supplied along the first hydraulic fluid path at a constant hydraulic attenuation regardless of hydraulic fluid supplied along the second hydraulic fluid path.

4,585,206

PROPORTIONAL FLOW CONTROL VALVE

Noboru Itoh, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Oct. 23, 1985, Ser. No. 790,609
Claims priority, application Japan, Oct. 29, 1984, 59-226982
Int. Cl.[4] F16K *31/40, 31/42, 31/128*
U.S. Cl. 251—30.02 **1 Claim**



1. A proportional flow control valve including a main flow control portion having a plunger slidably inserted into a valve body, said plunger being biased in one direction by a spring acting on one end thereof and a pressure of a chamber housing said spring and responsive to a pressure of an inlet port of said valve body acting on the other end thereof against said biasing force to regulate an opening of a passage from said inlet port to an outlet port of said valve body, and a restriction passage formed across said plunger, a pilot operation portion having a proportion solenoid fixedly secured to said valve body for

producing a pushing force acting on a push rod, said pushing force being proportional to an input current to said solenoid and a pilot spool slidably inserted into said valve body and biased in one direction by a spring acting on one end thereof, the other end being urged to said push rod by said spring biasing, said pilot operation portion forming a variable orifice whose opening depends upon a deviation of said pilot spool, a pilot passage connecting a space in the spring side of said plunger to one side of said opening of said variable orifice and a drain passage connecting the other side of said opening of said variable orifice to a drain, in which a flow rate of fluid flowing said restriction passage and hence a pressure difference across said restriction passage is varied by varying said input current, to vary a position of said plunger to thereby control the flow rate, wherein said pilot spool is slidably inserted into a sleeve inserted into and secured to a valve bore of said valve body and said one end of said pilot spool is formed with a poppet portion which is able to contact with a valve seat formed in one end of said sleeve, a restriction passage is connected across said pilot spool, said drain passage is provided between a chamber in which said push rod is arranged and said drain, said poppet portion is in intimate contact with said valve seat when a pushing force of said proportion solenoid is zero, said pilot passage is connected through said variable orifice and said poppet portion to a spring chamber when said pilot spool is pushed by said push rod, and said pilot spool is formed, in a region between an annular groove formed thereon and connected to said pilot passage and a chamber connected to said drain passage, with a long land which is in contact with an inner surface of said sleeve.

4,585,207

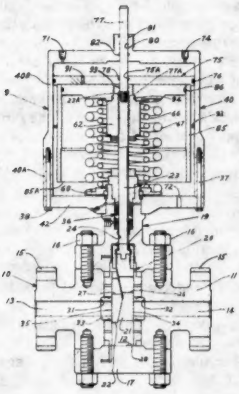
EXPANDING GATE VALVE WITH PNEUMATIC ACTUATOR

William S. Shelton, Houston, Tex., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 3, 1985, Ser. No. 772,107

Int. Cl.[4] F16K *31/143*

U.S. Cl. 251—62 **4 Claims**



1. An actuator device for actuation of a gate valve of the expanding gate type which comprises a valve body with a valve chamber therein and a flow passage extending through said valve body and communicating with said valve chamber, an expandable gate assembly mounted within said valve chamber for movement in a collapsed condition between open and closed positions with respect to said flow passage, said gate assembly including a gate element and a segment which are expanded away from each other at said open and closed positions and are provided with ports which are aligned with one another and the flow passage in said open position, said gate element and segment being each provided with an outer sealing surface for sealing against valve seats provided in said valve body at opposite sides of the gate assembly when the gate assembly is expanded in the open and closed positions, said valve body having a bore extending form the exterior of the valve body into said valve chamber in generally transverse relation to said flow passage;

pneumatic powered actuator means for moving the gate assembly transversely with respect to said flow passage said open and closed positions, said actuator means comprising an actuator housing mounted on said valve body and defining a first piston chamber therewith;

a primary piston slidably mounted in said first piston chamber;

fluid inlet means provided through the wall of said housing and adapted for connection to a source of pneumatic pressure whereby pressurized fluid may be selectively admitted to said first piston chamber on a fluid receiving side of said primary piston;

means including one side of said primary piston for defining a second piston chamber;

a drive piston slidably received in said second piston chamber; and actuator stem connected at one end to said drive piston and at its other end to the gate assembly, said drive piston being movable with the actuator stem in the axial direction of the stem to move the gate assembly transversely with respect to said flow passage between said open and closed positions;

spring means in said actuator housing for continuously urging said drive piston to an abutting relationship with said primary piston and in a direction opposed to the pneumatic pressure applied to said primary piston, said primary piston being provided with a flow control orifice extending through the primary piston whereby pressurized pneumatic fluid admitted to said first piston chamber will be communicated to said drive piston through said flow control orifice;

and stop means for limiting the length of the primary piston stroke to a lesser length than that of the drive piston stroke when pressurized pneumatic actuating fluid is admitted to said first piston chamber, said orifice acting to restrict the flow of pneumatic actuating fluid into said second piston chamber after termination of the primary piston stroke and thereby control the velocity and momentum of said drive piston, actuator stem, and gate assembly in the operation of the gate valve by maintaining the velocity substantially constant.

4,585,208

VALVE, PARTICULARLY A THERMOSTATIC VALVE FOR HOT WATER RADIATORS

Erik E. Andresen, Nordborg, and Jorgen Abildtrup, Højbjerb, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Dec. 30, 1983, Ser. No. 567,417

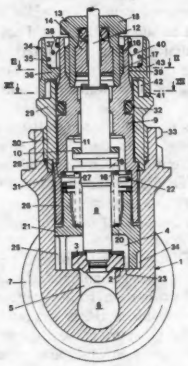
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300623

Int. Cl.[4] F16K *35/00*

U.S. Cl. 251—96 **5 Claims**

1. A thermostatic valve assembly, comprising, a housing having controlled opening with a surrounding valve seat, said housing defining supply and discharge chambers on opposite sides of said opening, a valve closure member in said supply chamber for controlling the flow of fluid through said opening, an adjustable throttle member rotatably mounted in said valve chamber in surrounding relation to said valve closure member, said throttle member having means so that upon being adjustably rotated it forms an adjustably variable cross section throttle passage, an annularly shaped setting element connected to said throttle member for rotation therewith, an annularly shaped depressor element attached to said housing, first spring means between said depressor element and said throttle element for resiliently biasing said throttle element in an axial direction towards said valve controlled opening, a setting knob

connected to said setting element, first spline means between said knob and said setting element and second spline means between said knob and said depressor element, second spring means between said knob and said setting element biasing said knob in an axial direction into abutting engagement with said



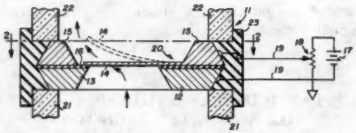
depressor element, said knob being axially moveable against the force of said second spring via said second spline means to be rotatably disengageable from said depressor element and thereby be free to adjustably rotate said throttle member via said setting element and said first spline means.

4,585,209

MINIATURE VALVE AND METHOD OF MAKING SAME

Harry E. Aine, 30600 Page Mill Rd., and Barry Block, 30610 Page Mill Rd., both of Los Altos, Calif. 94022, assignors to Harry E. Aine and Barry Block, both of Los Altos, Calif.

Filed Oct. 27, 1983, Ser. No. 545,907
Int. Cl.[4] F16K *31/02*
U.S. Cl. 251—129.02 **17 Claims**



1. In an electrostatic miniature valve;

valve seat means having an opening therein through which the flow of fluid is to be controlled and having a valve seat electrode portion for receiving an operating potential in use;

valve means for disposition adjacent said valve seat means and having a cantilever leaf spring portion for overlaying said valve seat means and said opening and also including a valve member electrode portion mechanically operatively associated with said leaf spring portion for receiving an operating potential in use; and

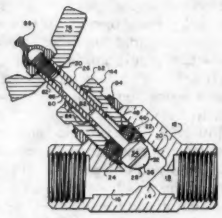
electrical insulator means for disposition between said electrode portion of said valve seat means and said valve member electrode portion of said valve means, the mutually opposed areas of said electrode portions and their spacings being dimensioned for allowing an electrical potential difference to be applied between said valve means and said valve seat means for pulling said cantilever leaf spring portion by electrostatic attraction over said opening in at least partially closing relation therewith for controlling the flow of fluid therethrough.

4,585,210

SAFETY HARD SEAT

Donald L. Adams, P.O. Box T, Tulia, Tex. 79088

Filed Feb. 29, 1984, Ser. No. 584,594
Int. Cl.[4] F16K *31/50, 31/60*
U.S. Cl. 251—214 **7 Claims**



1. A safety hard seat valve comprising:

a. a body,

b. a body seat with an axis in the body,

c. an outlet passageway extending from the seat to outside the body,

d. an inlet passageway extending from outside the body to the seat,

e. a bore in the body coaxial with the seat,

f. threads in the bore,

g. a back seat with external threads screwed into the bore,

h. an inner stem in the bore and extending through the back seat,

i. the inner stem having a valve end and distal end,

j. a valve unit on the valve end of the inner stem,

k. the valve unit being positioned between the body seat and back seat and adapted to seat against the body seat,

l. the valve unit also adapted to seat against the back seat,

m. packing threaded into the bore to sealingly engage against the back seat and around the inner stem,

n. a tubular packing nut having inner and outer threads,

o. the packing nut screwed into the bore against the packing and around the inner stem,

p. packing lock means on the packing nut for locking the packing nut to the body,

q. a tubular outer stem having a handle end and a body end,

r. external threads on the body end of the outer stem mated with the inner threads of the packing nut with the inner stem telescoped in the outer stem,

s. a groove around the distal end of the inner stem,

t. a ledge in the bore of the outer stem near the handle end of the outer stem,

u. a snap ring in the groove contiguous with the ledge to limit the telescopic movement of the inner stem in the outer stem,

v. a set screw threaded into internal threads at the handle end of the outer stem,

w. the set screw contiguous with the distal end of the inner stem,

x. a handle over the handle end of the outer stem, and

y. a handle nut threaded to the threaded set screw and bearing against the handle.

4,585,211

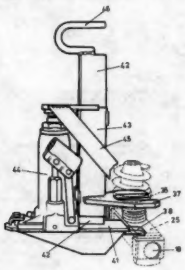
METHOD AND APPARATUS FOR ADJUSTING AGRICULTURAL CULTIVATOR TYNES

Alan Griffin, North Belair, Australia, assignor to Collison & Co., Adelaide, Australia

Division of Ser. No. 397,683, Jul. 13, 1982, Pat. No. 4,502,548.
This application Jan. 11, 1985, Ser. No. 690,681
Claims priority, application Australia, Jul. 16, 1981, PE9770
Int. Cl.[4] B66F *3/36*
U.S. Cl. 254—10.5 **3 Claims**

2. A spring tension adjustment system for use with a spring

loaded agricultural tyne wherein the spring is of a type acting along the spring pressure rod, an adjustment means is provided on the pressure rod whereby to vary the spring tension, characterized in that the adjustment means comprises a plurality of shoulders on the pressure rod, a collet abuttable against any



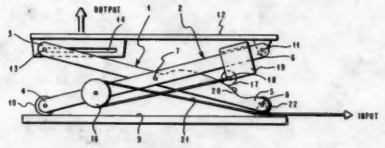
one of the shoulders to provide a series of discreet spring tension adjustments, and means independent of the collet engageable between the spring and the pressure rod such that the spring may be compressed for adjustment, said independent means including a hydraulic jack adapted to provide the spring compressive force.

4,585,212

LIFT DEVICE OF THE SCISSOR-JACK TYPE

George M. Yanker, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,502
Int. Cl.[4] B66F 3/22
U.S. Cl. 254—122 10 Claims



1. A lift device including a base, a platform, first and second scissor-like arms, connected at a pivot, stationary and slideably attached relative to that base as well as to said platform, said lift device comprising:

a pulley connected to a first arm between said pivot and the end of said first arm adjacent to said base;

cam means including a cam follower on said first arm and a cam surface on said second arm; and,

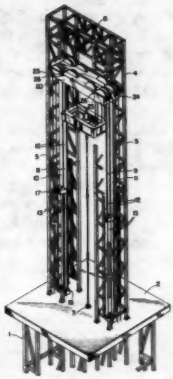
cable means fixed at one end to said cam follower and wrapped around said pulley for displacing said cable means a variable length, thereby moving said cam follower over said cam surface and lifting said platform a distance proportional to said length, the contour of said cam means, the position and diameter of said pulley chosen such that a predetermined ratio is maintained between displacement length of said cable means and lift distance of said platform.

4,585,213

WELL DERRICK

Grady M. Slagle, Jr., Dallas, and Raymond J. Swaim, Arlington, both of Tex., assignors to Armco Inc., Middletown, Ohio

Filed Aug. 7, 1984, Ser. No. 638,426
Int. Cl.[4] B66D 3/08; B66C 23/60
U.S. Cl. 254—386 40 Claims



1. In a well derrick, the combination of

a substructure including a floor having a drilling opening to be aligned with a well axis;

a tower supported by the substructure and projecting upwardly therefrom;

a travelling crown block having a vertical axis;

guide means coacting between the crown block and the tower to restrain the crown block laterally to maintain the vertical axis of the crown block aligned above the drilling opening of the floor while allowing the crown block to travel upwardly and downwardly relative to the tower;

at least one pair of hydraulically operated linear actuators extending upwardly above the floor and each including

an elongated hollow cylinder,

an elongated rod member telescopically arranged within the cylinder, and

means coacting between the cylinder and the rod member in piston fashion,

the rod members having free end portions projecting from the respective cylinders,

the cylinders having closed ends opposite the rod members,

the linear actuators of each pair being located each on a different side of the drilling opening;

releasable means for securing one of (a) the free ends of the rod members and (b) the closed ends of the cylinders to the crown block, the other of (a) the free ends of the rod members and (b) the closed ends of the cylinders being secured to one of the substructure and an upper end portion of the tower to fix said other of the cylinders and the rod members against longitudinal movement relative to the combination of the substructure and the tower, whereby the crown block can be driven upwardly and downwardly by operation of the linear actuators;

reeving means mounted on the crown block and having four sets of reeving wheels, each set of reeving wheels comprising

first and second reeving wheels having centers located on a common horizontal line parallel to one side of the crown block and located on one side of the vertical axis of the crown block, and

a third reeving wheel located on the opposite side of the vertical axis of the crown block:

a travelling beam; and

cable means comprising for each set of reeving wheels

a first cable having one end connected to the substructure and extending upwardly, over the first reeving wheel and thence downwardly to the travelling beam, the other end of the first cable being secured to the travelling beam on the side thereof adjacent the first reeving wheel, and

a second cable having one end connected to the substructure and extending upwardly, over both the second and third reeving wheels and thence downwardly to the travelling beam, the other end of the second cable being secured to the travelling beam on the side thereof diagonally opposite the location of the first cable,

said one ends of the cables for the first and second sets of wheels being connected to the substructure on one side of the well axis, and said one ends of the cables for the third and fourth sets of wheels being connected to the substructure on the opposite side of the well axis;

the first and second wheels of the first set of reeving wheels have centers located on a first horizontal line perpendicular to a vertical plane containing the longitudinal axes of the linear actuators and the well axis, said centers being located on a different side of and spaced equally from said vertical plane;

the first and second wheels of the second set of reeving wheels having centers located on said first horizontal line, spaced equally from said vertical plane and each disposed between that plane and a different one of the first set of reeving wheels;

the centers of the first and second wheels of the third set of reeving wheels being located on a second horizontal line perpendicular to said vertical plane and located each on a different side of and spaced equally from said vertical plane, said second horizontal line being on the other side of said well axis from said first horizontal line; and

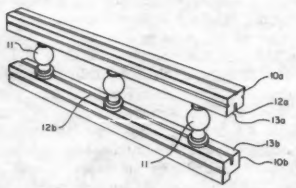
the centers of the first and second wheels of the fourth set of reeving wheels being located on said second horizontal line each on a different side of and spaced equally from said vertical plane and each disposed between that plane and a different one of the first and second wheels of the third set of reeving wheels.

4,585,214

DECORATIVE RAILS AND METHOD FOR ASSEMBLING SAME

Carroll W. Cope, Marion, Va., assignor to DG Shelter Corp., Marion, Va.

Filed Nov. 5, 1984, Ser. No. 668,297
Int. Cl.⁴ E04H *17/14*
U.S. Cl. 256—65 **4 Claims**



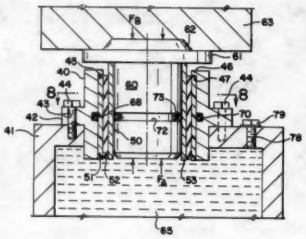
1. A rail-like structure comprising at least one elongate rail with at least one inner-surfaced, deformable, rail channel defined longitudinally along a side thereof, said rail channel having a substantially constant width and essentially comprising a longitudinal base surface and two longitudinally opposite surfaces at least one of which is compressively deformed by at least one rail channel engaging means attached to a rail support, said means having a width greater than said width of said rail channel and comprising a tab and ridge which are substantially more resistant to compressive deformation than said compressively deformed channel surface.

4,585,215

RUBBER-PLASTIC COMPOSITE

James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 530,934, Sep. 12, 1983, abandoned, which is a division of Ser. No. 360,092, Mar. 19, 1982, abandoned. This application Mar. 21, 1984, Ser. No. 592,031
Int. Cl.⁴ F16F *9/24*
U.S. Cl. 267—124 **8 Claims**



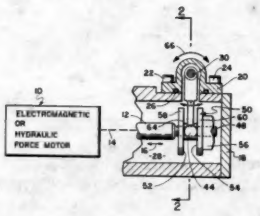
1. An elastomeric shear spring having a support operative to exerted a variable force; a hollow metal sleeve abuttingly contacting said support for movement therewith; said support having a cylindrical plug received by the bore of said hollow metal sleeve; an annular elastomeric ring in compression having its inner bore bonded to said metal sleeve; an annular sleeve of ultra high molecular weight polyethylene having its inner surface bonded to said elastomeric ring; said polyethylene sleeve is slidably received by a housing having a fluid reservoir; said fluid reservoir having a fluid thereinfor exerting a pressure on said polyethylene sleeve, said elastomeric ring, said metal sleeve and said plug.

4,585,216

LINEAR ACTUATOR SUSPENSION SYSTEM

Kent R. Boyer, Valencia, and Clyde E. Cobb, Lakeview Terrace, both of Calif., assignors to HR Textron Inc., Valencia, Calif.

Filed Jun. 4, 1984, Ser. No. 616,951
Int. Cl.⁴ F16F *1/00*
U.S. Cl. 267—150 **5 Claims**



1. A force motor having a shaft threaded on one end and linearly movable reciprocally within a housing with respect to a null position responsive to input signals applied thereto and including means for biasing said shaft toward the null position as it reciprocates comprising:

means for defining a pair of opposed spaced apart side walls threadably received on the threaded end of said shaft and adjustable to a predetermined position corresponding to the null position of said shaft;

a frame secured to said housing;

a torsion bar having first and second ends each of which is permanently rigidly secured to said frame;

an arm having first and second ends, the first end of said arm

being permanently rigidly secured to said torsion bar intermediate the ends of said torsion bar, the second end of said arm being bifurcated and said bifurcations being disposed one on each side of said shaft and in contact with each of said side walls; and

means for locking said side wall defining means at said predetermined position on said shaft.

4,585,217

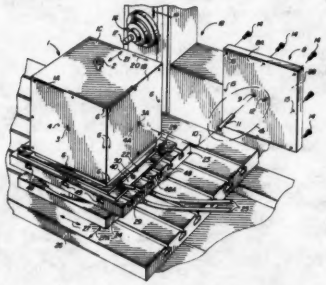
WORKPIECE SUPPORT APPARATUS AND METHOD

Robert W. Erickson, 209 Johns St., North Aurora, Ill. 60542

Filed Sep. 20, 1983, Ser. No. 534,184

Int. Cl.[4] B23Q *3/06*; B23D *7/08*

U.S. Cl. 269—56 **2 Claims**



1. A workpiece supporting apparatus comprising in combination:

(a) a plurality of tooling plates each having a flat inner surface, an outer surface for supporting a plurality of un-machined workpieces, and a plurality of peripheral clearance holes;

(b) a symmetrical tooling block for supporting a plurality of said tooling plates, each tooling plate supporting a plurality of said un-machined workpieces, said tooling block including a plurality of flat outer surfaces that define a symmetrical polygon, said tooling block including an eyelet attached to the top of said tooling block to effectuate lifting of said tooling block by means of a crane, said tooling block including a bottom flange and also including a plurality of peripheral threaded holes for receiving a plurality of cap screws extending through said clearance holes;

(c) first aligning means for precisely aligning each of said tooling plates with a respective flat outer surface of said tooling block and rigidly, removably attaching that tooling plate to that flat outer surface, said first aligning means including a plurality of dowels, each of said dowels extending perpendicularly out of a precision hole in the center of each of said flat outer surfaces of said tooling block, each of said tooling plates having a precisely centered hole in its flat inner surface for receiving a respective one of said dowels to align that tooling plate to said tooling block, said first aligning means also including timing means for locking each tooling plate into precise rotational alignment with edges of said tooling block, said timing means including a pin in each flat outer surface of said tooling block and spaced from the dowel extending from that flat outer surface and a corresponding timing hole in said flat inner surface of that tooling plate for receiving that pin when that tooling plate is precisely rotationally aligned with said tooling block;

(d) second aligning means for effectuating precise aligning of said tooling block with a rotary table so that a longitudinal axis of said symmetrical polygon is coaxial with an axis of rotation of said rotary table and for rigidly attaching the aligned tooling block in fixed relationship with said rotary table, said second aligning means including a base plate attached to the bottom of said tooling block, said tooling block having three holes in a bottom surface thereof, said base plate having three holes in an upper surface thereof and defining a triangle, said second aligning means including three removable upper alignment keys in said three holes of said upper surface of said base plate, respectively, each of said upper alignment keys having a tapered upper surface to effectuate initial aligning of said tooling block with said base plate as said tooling block is lowered onto said base plate, said second aligning means further including three removable lower keys defining a triangle and having rectangular portions extending downward from the bottom of said base plate to engage keyways in the upper surface of said rotary table,

whereby a plurality of said tooling plates can be pre-loaded with un-machined workpieces, and a plurality of those pre-loaded tooling plates can be attached to said flat outer surfaces of a plurality of said tooling blocks, one of which then can be attached to said rotary table, which rotary table then can be rotationally indexed to sequentially present each of said tooling plates and un-machined workpieces thereon to the spindle of a numerically controlled machining device, wherein that tooling block later can be rapidly removed and replaced by another tooling block with tooling plates and un-machined workpieces thereon, to thereby maximize operating time of the numerically controlled machining device.

4,585,218

MECHANISM FOR FEEDING SIMILAR FLAT ITEMS IN SUCCESSION FROM A STACK THEREOF

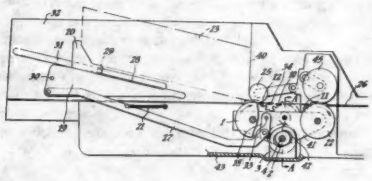
Thomas D. Williams, Billericay, and Paul Usher, Harpender, both of England, assignors to Roneo Alcatel Limited, Romfort, England

Filed Mar. 26, 1985, Ser. No. 716,160

Claims priority, application United Kingdom, Apr. 26, 1984, 8410714

Int. Cl.[4] B65H *5/00*

U.S. Cl. 271—10 **10 Claims**



1. Mechanism for feeding similar flat items in succession to a subsequent utilization device, with a gap between each item and the next along a substantially horizontal guide, from the underside of a stack of such items, the mechanism comprising:

means for supporting a stack of similar flat items;

a substantially horizontal guide extending from one end of said stack supporting means and located to receive the lowermost item in a stack from said supporting means as the item is withdrawn from said stack;

withdrawing means including a feed roller mounted for rotating about its axis and for engaging beneath the lowermost item in a stack supported by said supporting means at the end of the stack adjacent said guide and feeding that item onto said guide;

a rotary feeding device mounted to rotate about an axis parallel to said feed roller axis spaced along said guide and positioned to receive a said item from said feed roller and feed it forward thereby making way for a further such item delivered by said feed roller;

means for continuously rotating said feed roller and said feeding device during the operation of the mechanism;

said withdrawing means including a reciprocable member

carrying said feed roller and mounted for alternately moving said feed roller into contact with the bottom item in a stack and withdrawing said feed roller therefrom;

reciprocating means for actuating said reciprocable member at a frequency for engaging said feed roller with the underside of a stack at a rate for feeding items therefrom along said guide to said feeding device with predetermined gaps between the items; and

means responsive to the length of the items in a stack in the direction of said guide for changing said frequency and thereby eliminating undue variation in the lengths of the gaps between items fed along said guide when a stack of items of one length is replaced by a stack of items of another length.

4,585,219

SERIES FEEDING DEVICE FOR A FOLDING MACHINE

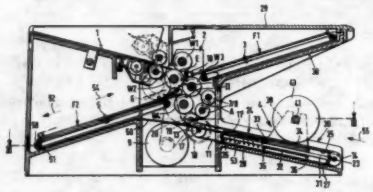
Werner Lehmann, Gutach; Rainer Fecker, Furtwangen, and Manfred Fuss, St. Georgen, all of Fed. Rep. of Germany, assignors to Mathias Bäuerle GmbH, Fed. Rep. of Germany

Filed Jun. 28, 1985, Ser. No. 750,696

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1984, 3425302

Int. Cl.[4] B42C *1/00*; B65H *45/20*

U.S. Cl. 270—46 **11 Claims**



1. In a machine for folding a plurality of materials having means for feeding the materials to be folded in succession along a transport path, a plurality of folding devices arranged along the transport path including a folded material receiving pocket with an adjustable stop position to receive the materials at the location of the stop and for delivering the materials in the pocket to an ejection point, the improvement comprising a conveyor belt having a transport reach movable below the ejection point in a position to receive the folded materials, at least one brake element overlying said transport reach and resting on the folded materials moving thereon, mounting means associated with said brake element so that said brake element applies a yieldable pressure on the materials as they are moved, and a member connected to said mounting means and to the adjustable stop and being actuated by movement of the adjustable stop to move said mounting means by a corresponding amount in respect to said ejection point.

4,585,220

METHOD OF OPERATING INSERTION MACHINE AND PRINTER WITH CONTROL SIGNALS STORED ON SEARCHABLE MEDIUM

Edward H. Zemke, deceased, late of Chicago (by Anne Zemke, legal representative); Harold D. Pogue, Chicago; Girish B. Shah, Schaumburg, and Myron A. Bowles, Waukegan, all of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 525,767, Aug. 23, 1983, Pat. No. 4,544,146.

This application Dec. 28, 1984, Ser. No. 669,710

Int. Cl.[4] B65H *39/02*

U.S. Cl. 270—54 **4 Claims**

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 92 Pages)

1. An insertion machine system of a type wherein a plurality of insert stations are positioned proximate a conveyor traveling therealong for feeding inserts onto said conveyor, said conveyor having an upstream end and a downstream end, at least one of said insert stations being responsive to insertion machine control signals which control the feeding of inserts therefrom, said system comprising:

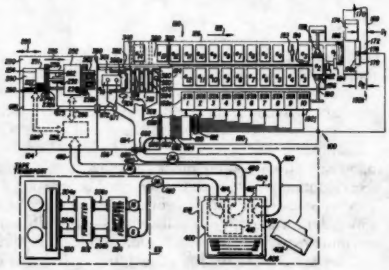
a printer;

article supply means for supplying articles to said printer, said articles having at least a first side and a second side, said article supply means being adapted to supply articles to said printer in an orientation whereby said printer can print characters on a first side of said articles;

a storage medium containing information indicative of customer data for a plurality of customers, said storage medium being formatted to have a record of character information for each customer, each of said records including a field of information wherein characters indicative of insertion machine control signals are stored and at least one field of information wherein characters indicative of customer identification is stored;

article turnover means for turning over articles and for introducing said turned-over articles onto said conveyor proximate said upstream end of said conveyor, said article turnover means being positioned downstream from said printer and adapted to turn over said articles in a manner whereby said second side of each article assumes the orientation previously had by said first side;

means for accessing said storage medium and for retrieving therefrom for a customer both said characters indicative of insertion machine control signals and said characters indicative of customer identification;



means for communicating at least said characters indicative of customer identification to said printer and for enabling said printer to print at least said characters indicative of customer identification on said first side of said article;

print completion detection means for detecting the completion of character printing by said printer on said article and for generating a print completion signal in accordance with said detection;

a data bus whereupon said insertion machine control signals are communicated to said at least one insert station subsequent to generation of said print completion signal;

article turnover ready detection means for detecting when said article turnover means is loaded with an article which is to be turned over and introduced onto the conveyor;

a memory into which character data can be entered;

data entry means for entering character data into said memory including a string of input characters comprising a plurality of sequentially arranged characters for at least temporary storage in said memory; and,

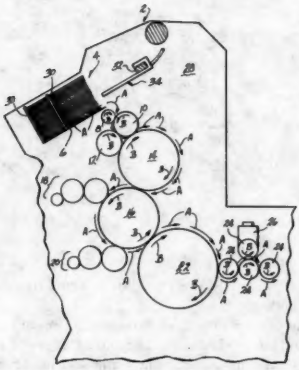
means for searching said storage medium in order to find a match between a string of stored characters and a string of input characters entered into said memory through said data entry means and in order to determine on the basis of said match which record of information on said storage medium is to be accessed, said string of stored characters comprising a plurality of sequentially stored characters in a record on said storage medium.

4,585,221

ENVELOPE FORMING MACHINE WITH ENVELOPE BLANK STACK SENSOR

Harold R. Lillibridge, Burlingame, Calif., assignor to American Envelope Company, Chicago, Ill.

Continuation of Ser. No. 509,142, Jun. 30, 1983, abandoned.
This application Jun. 12, 1985, Ser. No. 744,290
Int. Cl.[4] B31B *1/06, 3/02;* B65H *5/18*
U.S. Cl. 271—10 1 Claim



1. An apparatus for feeding flat blanks from a stack thereof into a forming machine, said apparatus comprising:

(a) support means for supporting a stack of blanks;

(b) feed means disposed below said support means and operable to engage the lowermost blank in the stack to feed individual blanks from the bottom of the stack thereby depleting the blanks in the stack to lower the height of the stack;

(c) an optical sensor mounted on said machine and focused on a point a predetermined distance above the bottom of the stack so as to sense when the stack is depleted to a level below said point of focus;

(d) an electrical power source;

(e) an electrical switch electrically connected to said power source and to said optical sensor, said switch being operable in a first mode to electrically connect said power source to said optical sensor to activate the latter, and operable in a second mode to electrically disconnect said power source from said optical sensor to deactivate the latter whereby said machine will continue to operate after the stack has been depleted to a level below said point of focus;

(f) means for discontinuing operation of the machine in the event of a jam, the discontinuing means being connected to the optical sensor, and the discontinuing means being operable by the optical sensor only when the electrical switch is in the first mode; and

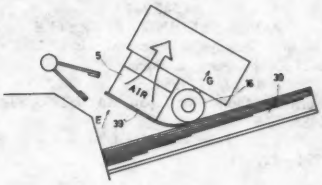
(g) a signal light connected to said electrical source via said electrical switch, said electrical switch being operable to energize said signal light when said switch is in one of said modes whereby said signal light provides an indication of the state of said optical sensor.

4,585,222

SHEET PAPER ATTRACTING SYSTEM

Toshiki Nishibori; Sumio Kita, both of Nara, and Hiroshi Kamada, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 23, 1983, Ser. No. 468,959
Claims priority, application Japan, Mar. 1, 1982, 57-32629; Mar. 1, 1982, 57-32631
Int. Cl.[4] B65H *3/08*
U.S. Cl. 271—106 3 Claims



1. A paper supply system comprising:

a paper sheet holder for supporting paper sheets stacked thereon;

a paper sheet attracting unit having a wall provided with a plurality of air intake openings,

said wall confronting said paper sheets supported by said paper sheet holder;

a suction air casing having a vacuum chamber formed therein, said suction air casing being disposed with respect to said paper sheet attracting unit so as to create an attracting suction force through said intake openings;

a flexible duct for movably connecting said paper sheet attracting unit to said suction air casing;

a pressure roller for depressing said paper sheets supported by said paper sheet holder by a predetermined pressure, and;

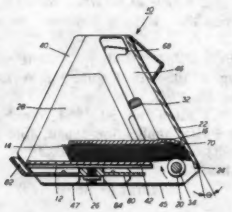
drive means for rotating said paper sheet attracting unit around said pressure roller in a manner such that a contact point of said pressure roller with an uppermost sheet of said stacked paper sheets functions as a support point of the rotation.

4,585,223

ENVELOPE FEEDER

Alexander Tam, 1282 Mattox Rd., Apt. 40, Hayward, Calif. 94541

Filed Sep. 26, 1983, Ser. No. 536,043
Int. Cl.[4] B65H *3/06, 3/54*
U.S. Cl. 271—121 6 Claims



1. An envelope feeder which comprises:

a low-friction support plate for supporting envelopes;

a pressure plate for pressing envelopes against said support plate;

a drive roller separator having a high-friction surface posi-

tioned to contact envelopes pressed against said support plate; and

a separator tongue having a low-friction surface positioned such that envelopes driven by said drive roller separator are bent and are caused to slide along said separator tongue, said drive roller separator and said separator tongue being shaped to contact a center position only of fed envelopes, and wherein said pressure plate is formed with an arched end portion adjacent the drive roller separator to assist the bending of the envelopes.

4,585,224

PAPER FEEDING APPARATUS

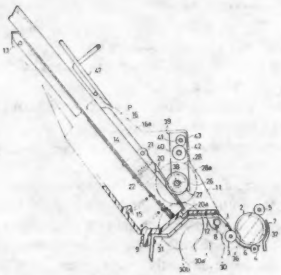
Susumu Kuzuya, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 19, 1984, Ser. No. 602,188

Claims priority, application Japan, May 6, 1983, 58-68388[U]; May 7, 1983, 58-68177[U]

Int. Cl.⁴ B65H *5/16*

U.S. Cl. 271—127 **3 Claims**



1. A paper feeding apparatus comprising

a frame;

feed rollers supported pivotally on said frame;

a plate like holder table for holding stacked pieces of printing paper thereon, said holder table being urged toward said feed rollers at all times;

a pair of support means for supporting right and left side portions of said holder table pivotally about an axis substantially parallel to the axis of rotation of said feed rollers, relative to said frame; and

adjusting means for adjusting the position of pivot center of said holder table relative to said frame, said adjusting means being attached to at least one of said support means, wherein said adjusting means comprises an eccentric shaft.

4,585,225

PAPER JOGGING APPARATUS

Isamu Miura, 16-6, Ryusen 3-chome, Taitou-ku Tokyo, Japan (110)

PCT No. PCT/JP84/00340, § 371 Date Aug. 8, 1984, § 102(e) Date Aug. 8, 1984, PCT Pub. No. WO85/00349, PCT Pub. Date Jan. 31, 1985

PCT Filed Jun. 30, 1984, Ser. No. 642,662

Claims priority, application Japan, Jun. 30, 1983, 58-118835; Jun. 30, 1983, 58-118836; Jun. 30, 1983, 58-118837; Jun. 30, 1983, 58-118838

Int. Cl.⁴ B65H *31/38*

U.S. Cl. 271—211 **7 Claims**

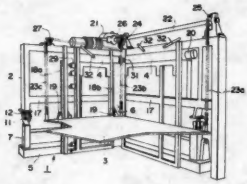
1. A paper jogging apparatus comprising:

(a) a base frame body having horizontally extending main frames;

(b) a tiltable body tiltably supported on a support post of said base frame body and a side support portion having frame portions extending along said base frame body;

(c) tilting motor means operatively connected to said support post for raising or lowering said support post and side support portion and for tiltably moving said tiltable body about said support post for aligning said paper being stacked on said apparatus;

(d) up-down table means for carrying paper sheets and being vertically movably mounted on said tiltable body at a position surrounded by said frame portions of said tiltable



body, and adapted to be raised or lowered by an up-down motor, and;

(e) vibratory plates mounted above and adjacent said tiltable body, and adapted to vibrate adjoining edges of said paper sheets on said up-down table while said up-down table is tilted by said tilting motor means so as to align the paper sheets.

4,585,226

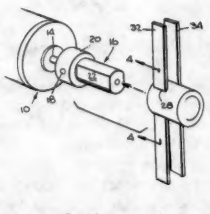
RESILIENT DOCUMENT FEEDING MEMBER

Joseph LaBate, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 12, 1984, Ser. No. 630,129

Int. Cl.⁴ B65H *5/06, 3/06*

U.S. Cl. 271—264 **4 Claims**



1. A resilient document feeding member, comprising:

a drive shaft;

a first hub fixedly secured to said drive shaft, said first hub having a pair of opposing flat surfaces;

a second hub fixably mountable to said first hub, for rotation therewith, said second hub having a pair of parallel slots which, together with said opposing flat surfaces when said second hub is mounted on said first hub with said slots parallel to said opposing flat surfaces define a pair of straight channels; and

a pair of resilient arbor flaps, each of said flaps being mounted in one of said straight channels to thereby frictionally lock the second hub to the first hub, whereby changing of said flaps requires only pulling said second hub away from said first hub and re-mounting said second hub on said first hub without the use of any tools.

3. A resilient document feeding member, comprising:

a drive shaft;

a first hub fixedly secured to said drive shaft, said first hub having a median slot extending across the outer end thereof;

a second hub fixably mountable to said first hub for rotation therewith, said second hub having a pair of diametrically aligned slots which, together with said median slot when said second hub is mounted on said first hub with said median slot aligned with said diametrically aligned slots, define a straight channel; and

a resilient arbor flap mounted in said straight channel to thereby frictionally lock the second hub to the first hub whereby changing said flap requires only pulling said second hub away from said first hub and re-mounting said second hub on said first hub without the use of any tools.

4,585,227

APPARATUS FOR SUBDIVIDING A STREAM OF PARTIALLY OVERLAPPING PAPER SHEETS

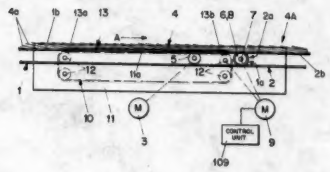
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed May 15, 1984, Ser. No. 610,405

Claims priority, application Switzerland, May 17, 1983, 2673/83

Int. Cl.[4] B65H *5/24*; B65G *47/26*

U.S. Cl. 271—270 **14 Claims**



1. Apparatus for separating discrete sections of selected length from the leader of a stream of sheets, particularly from a stream of partially overlapping paper sheets, comprising first conveyor means arranged to advance the stream in a predetermined direction along a first elongated path, said conveyor means having a discharge end; second conveyor means defining at least one second elongated path and having a receiving end downstream of said discharge end, as considered in said direction; accelerating means adjacent to a portion of said first path ahead of said discharge end and arranged to repeatedly accelerate those portions of the leader of the stream in said first path whose length at most matches said selected length; first drive means for moving said first conveyor means at a first speed; and second drives means for alternately moving (a) said second conveyor means and said accelerating means in said direction at a higher second speed so that said accelerating means separates the portion of the leader in said first path from the remainder of the stream and advances the thus obtained section into said second path where the section is advanced by said second conveyor means, and (b) said second conveyor means at a third speed which is lower than said second speed and at least approximates said first speed with attendant deceleration of the section in said second path, said second drive means being arranged to move said accelerating means at said third speed jointly with said second conveyor means.

4,585,228

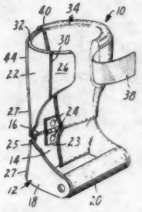
WEIGHT ASSEMBLY

Scott B. Olson, Bloomington, Minn., assignor to North American Sports Training Corporation, Minneapolis, Minn.

Filed Aug. 31, 1984, Ser. No. 646,901

Int. Cl.[4] A63B *21/12*

U.S. Cl. 272—119 **5 Claims**



1. A weight assembly adapted to be worn around the hand, wrist and forearm comprising:

a heavy metal stirrup like hand plate having a central portion adapted to generally cover and extend transversely across the back of the hand, a transverse edge adapted to extend generally across the wrist, and end portions projecting generally at right angles from opposite ends of their central portion a distance adapted to extend past the palm of the hand;

a generally tubular grip extending between said end portions, spaced from said central portion and adapted to be encircled and grasped by the fingers and thumb of the hand;

a heavy metal forearm plate adapted to extend for a predetermined distance longitudinally along one side of the forearm from adjacent the wrist, and having an adjacent edge adjacent the transverse edge of said hand plate;

a hinge connected between said hand plate and said forearm plate to afford pivotal movement therebetween along only a single axis between said transverse and adjacent edges;

a flexible cover enveloping said plates and said hinge and means for releasably fastening said plate to said forearm.

4,585,229

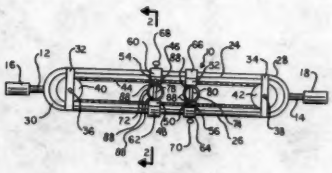
EXERCISING APPARATUS

Tallie J. Brasher, P.O. Box 15689, Baton Rouge, La. 70895

Filed Jul. 23, 1984, Ser. No. 633,343

Int. Cl.[4] A63B *13/00*

U.S. Cl. 272—123 **17 Claims**



1. An exercising apparatus comprising:

a. bar means adapted to receive exercise weights said bar means having two sheaves connected thereto;

b. a pair of ring means slidably connected to said bar means;

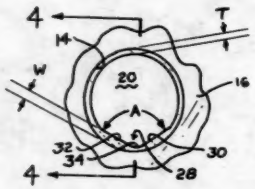
c. means operatively connecting said ring means to said sheaves for slidably adjusting said ring means along said bar means; and

d. handle means positioned within and rotatably connected to each of said rings.

4,585,230
FINGER HOLE INSERT FOR BOWLING BALLS

Richard J. Martin, 1140 Parkington Ave., Sunnyvale, Calif. 94087

Filed May 31, 1984, Ser. No. 615,833
Int. Cl.[4] A63B *37/00*
U.S. Cl. 273—63 A **3 Claims**



1. A bowling ball finger hole insert of generally tubular configuration and formed from resilient material, characterized by:

an outer surface substantially coincident with an outer right circular cylinder; and

an inner surface comprising a major portion substantially coincident with an inner right circular cylinder which is substantially coaxial with said outer right circular cylinder, and two adjacent minor surface portions which are disposed at an angle to each other and are not coincident with said inner right circular cylinder and have an inner surface configuration such that the radial distance between each of said minor surface portions and said outer right circular cylinder is substantially greater than the radial distance between said inner and outer right circular cylinders.

4,585,231
METHOD OF FORMING A DEVICE FOR VIEWING COMPOSITE DESIGNS

Ebrahim Batmanghlich, 1155 N. La Cienaga Blvd., #304, Los Angeles, Calif. 90069

Filed Jan. 24, 1983, Ser. No. 460,456
Int. Cl.[4] A63F *9/08*
U.S. Cl. 273—155 **2 Claims**

1. A method of forming a game device which comprises a plurality of transparent disks, each of which having areas of spots such that a plurality of composite designs are viewed through a window, comprising the steps of:

forming said plurality of transparent disks to be rotatable about a common axis;

forming a top member over said plurality of transparent disks, said top member having said window in it through which a section of each of said plurality of transparent disks underneath said window can be viewed;

preparing said plurality of composite designs to be placed on said plurality of transparent disks to be viewed through said window, comprising the steps of,

separating each of said plurality of composite designs into component parts, said component parts in superimposed relationship producing one of said plurality of composite designs,

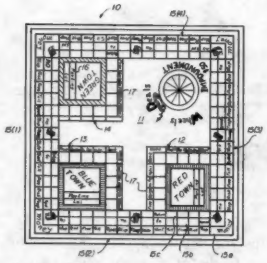
preparing rectangular grids, disposing on each grid one of said plurality of component parts, each of said component parts being in the form of one or more opaque spots, providing a portion of said rectangular grids for each of said plurality of transparent disks, and

arranging said rectangular grids in angularly spaced relationship on corresponding separate or overlapping areas on said plurality of transparent disks to be rotated to bring into aligned relationship a portion of said plurality of component parts which can be collectively seen through said window, collectively producing any one of the said plurality of composite designs.

4,585,232
AUTOMOBILE BOARD GAME HAVING UNIQUE COLOR CODE DICE

Lisa K. Sheppard, and Douglas Darnell, both of 671 Cimarron St., Springfield, Va. 22150

Filed Jun. 21, 1984, Ser. No. 622,972
Int. Cl.[4] A63B *3/00*
U.S. Cl. 273—248 **13 Claims**



1. A board game apparatus, comprising:

a game board having a plurality of separate and distinct playing areas designated thereon, including a peripheral playing path extending around the perimeter of the board and a plurality of separate and distinct inner playing paths spaced inwardly from the peripheral playing path, each playing path being divided into a plurality of movement spaces variously representing benefit or detriment to the player, and said inner playing paths representing home bases for each player;

a plurality of movement pieces for movement along the playing paths, said movement pieces being distinctively marked for each player;

the movement spaces including a plurality of money spaces located on the peripheral playing path and at least one bank space located in each inner playing path, there being at least one of said money spaces located after each of the bank spaces in the direction of playing piece movement;

a pair of dice, each die having distinctive marks on various faces thereof, said distinctive marks including differing numerical indicia and a second indicia different from the numerical indicia, each face of said die having said numerical indicia and said second indicia located thereon; and

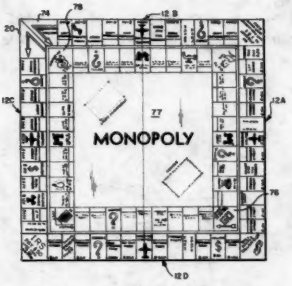
the arrangement of the numerical indicia and the second indicia being such that the maximum possible numerical indicia displayed when both dice display the same second indicia is equal to the number of movement spaces between said bank space and said money space located thereafter and thereby providing the only capability of moving from said bank space to said money space located thereafter in one turn.

4,585,233

BOARD GAME STRUCTURE

Peter Wilson, Ferry Rd., Hadlyme, Conn. 06439

Filed May 25, 1984, Ser. No. 614,069
Int. Cl.⁴ A63F *3/00, 9/00*
U.S. Cl. 273—256 **8 Claims**



1. A game board comprising;

first board means having plural edge portions along the perimeter therof;

a plurality of substantially planar first spaces disposed along each of said edge portions, said plurality of first spaces terminating along said first board means perimeter, each of said first spaces being provided with selective indicia and said indicia denoting at least one access space for entry into and out of said first board means;

a second game board, said second game board having plural second spaces, said second spaces having similar selective indicia relative to said indicia of said first spaces; and

means for receiving said second game board;

said receiving means aligning said second game board with said first board means whereby said first spaces are concentric to said second spaces and whereby said access space on said first board means permits entry into and out of said second game board.

4,585,234

MULTI-DIMENSIONAL GAME

Bruce F. Alsip, 2310 Upper Farm Rd., Bainbridge Island, Wash. 98110

Filed Feb. 22, 1985, Ser. No. 704,298
Int. Cl.⁴ A63F *3/00*
U.S. Cl. 273—271 **2 Claims**

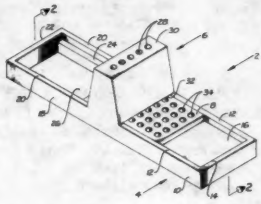
1. A game comprising:

an elongated rectangular base portion including an upwardly extending transverse tower portion at the midpoint thereof,

said base portion comprising a first end having a substantially flat upper surface and a second and forming a dish-like receptacle having its upper surface in a plane below the plane of the upper surface of the first end,

said transverse tower portion including a plurality of vertical bores across the width thereof and extending from the top thereof to the bottom thereof, said bottom being in a plane above the plane of the upper surface of the first end,

tray means having a plurality of bores arranged in rows, each row capable of being aligned with the bores of the tower, said tray means being movable incrementally beneath the tower portion whereby markers in the bores in



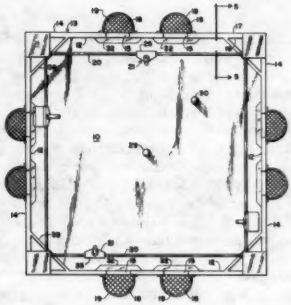
the tower will fall into the bores in the tray means upon alignment therewith and the markers will fall into the receptacle when the tray overlies the second end.

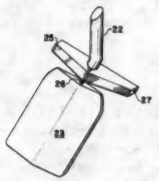
4,585,235

TABLE BALL GAME APPARATUS

Jerry D. Williams, 815 W. Ave. A, Elk City, Okla. 73644

Filed Feb. 13, 1985, Ser. No. 701,188
Int. Cl.⁴ A63F *7/00*
U.S. Cl. 273—355 **7 Claims**





1. An apparatus for enabling two or four people to play a competitive game involving skillful manipulative control of a ball on a horizontal game surface, said apparatus comprising:

(a) a flat horizontally disposed playing surface of substantially square perimeter,

(b) at least four support legs adapted to maintain said playing surface at table height above a floor,

(c) a playing ball having the general characteristics of a table tennis ball,

(d) at least one ball-receiving goal associated with each side of said perimeter,

(e) a retaining wall associated with each side of said perimeter, and rising upwardly from said playing surface,

(f) elongated sliding guide means associated with each side of said perimeter, and

(g) a paddle slidably engaged by each guide means in a manner permitting translational movement above the playing surface, said paddle having an elongated handle portion extending above said guide means and a flat striking portion extending below said guide means, the paddle being rotatable about the axis of elongation of said handle portion, and pivotable about said guide means.

4,585,236

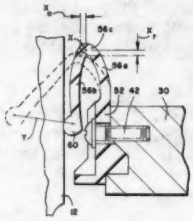
DOUBLE JOINTED COOLANT SEAL

Thomas E. Simmons, Westford; Charles L. Innis, Paxton, and Ralph F. DiVirgilio, Jefferson, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Mar. 14, 1985, Ser. No. 711,628

Int. Cl.[4] F16J *15/32, 15/34*

U.S. Cl. 277—38 **8 Claims**



1. In an oil film bearing assembly of the type adapted both to rotatably support and to accommodate limited axial movement of a roll neck in a rolling mill, the bearing assembly having a circular stationary component which surrounds the roll neck at a location spaced axially from an end face of the roll, a circular seal for preventing contaminants such as liquid coolant, mill scale, etc. from entering the bearing assembly between the roll end face and the stationary component, said seal comprising: a radially extending base flange adapted to be fixed to the stationary component; and, a flexible sealing flange integrally joined at one edge to and extending resiliently from said base flange, said sealing flange terminating at the opposite edge in a lip spaced axially from said base flange at a position to sealingly contact the roll end face, said sealing flange having mutually angularly offset first and second portions interconnected by an intermediate hinge portion, the configuration, flexibility and resilience of said sealing flange being such that axial displacement of said lip in relation to said base flange by said roll end face is accompanied by axial and radial displacement of said hinge portion.

4,585,237

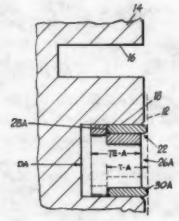
PISTON AND OIL CONTROL RING THEREFOR

Dale W. Koop, Hastings, Mich., assignor to Hastings Manufacturing Company, Hastings, Mich.

Filed Jan. 15, 1979, Ser. No. 3,248

Int. Cl.[4] F16J *9/12*

U.S. Cl. 277—139 **12 Claims**



1. A piston having a nominal diameter in a range of between 2.7 and 5.1 inches with an oil ring groove therearound and an oil ring therein comprising an expander ring with at least one cylinder engaging rail in partially overlapping and radially abutting relation to the expander ring and projecting outwardly of said groove wherein:

the combined radial thickness of the expander ring and the rail expressed as a percentage of the nominal diameter of the coacting piston falls between 2.5% and 7%, the relation of the combined thickness between said percentage limits being approximately the same as that which the nominal diameter of the piston holds in said range of piston diameters.

4,585,238

CHANNELED RING SEALS WITH SPRING RINGS

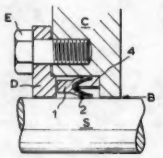
Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, Co. Durham, England

Filed Aug. 22, 1985, Ser. No. 768,146

Claims priority, application United Kingdom, Aug. 22, 1984, 8421326

Int. Cl.[4] F16J *15/12*

U.S. Cl. 277—205 **3 Claims**



1. A ring seal of the kind referred to characterised in that a channel in an annular jacket is of substantially part-elliptical radial profile and contains a partly spaced spring ring of partly elliptical radial profile comprised of a pair of metal rings which have axial slits and are secured together around their outer periphery prior to insertion within the jacket.

4,585,239

CHANNELED RING SEALS WITH SPRING RINGS

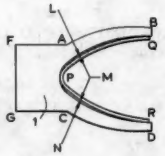
Terence P. Nicholson, Calf Hall, Muggleswick, Derwentside, Co. Durham, England

Filed Sep. 4, 1985, Ser. No. 772,568

Claims priority, application United Kingdom, Sep. 5, 1984, 8422359

Int. Cl.[4] F16J *15/12*

U.S. Cl. 277—205 **3 Claims**



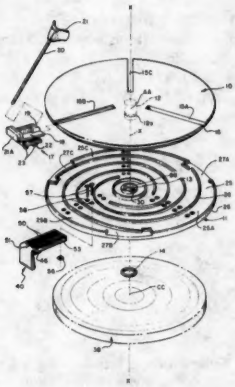
1. A ring seal of the kind referred to, characterised in that a channel in an annular jacket is of substantially part-elliptical radial profile and contains a spring ring of channel-shaped radial profile comprised of a transversely folded strip of metal with segmented side edges which is formed into a circle and has its ends secured together, there being a gap between a part of the spring ring and the channel in the jacket to allow movement of the spring ring relative to the jacket when the ring seal is brought into use.

4,585,240

CENTERING AND HOLDING DEVICE FOR USE WITH A POTTER'S WHEEL APPARATUS

Brian K. Giffin, Boulder, Colo., assignor to Giffin Earthworks, Inc., Boulder, Colo.

Filed Oct. 14, 1983, Ser. No. 542,104
Int. Cl.[4] B23B *31/16;* B23Q *3/06;* B28B *1/29*
U.S. Cl. 279—111 20 Claims



1. A system for centering and supporting a pottery work piece or a pottery work piece centering and holding device on a potters wheel head positioned about a central axis of rotation extending perpendicular to the wheel head, and having a substantially cylindrical peripheral surface, the system comprising:

means in the form of a first plate designed to support a pottery work piece or a pottery work piece centering and holding device, said first plate means being substantially circular and defining a central axis of rotation extending perpendicular to said first plate means, and also having an upper surface and a lower surface;

means for operably clamping said first plate means to a potters wheel head, said clamping means comprising a plurality of said means for clamping designed to be adjusted and positioned to engage the periperal surface of a potters wheel head, said clamping means being operably and adjustably attached to said first plate means; and

means for positioning said clamping means with respect to said first plate means, said positioning means including:

(a) a plurality of means for holding each of said plurality of clamping means fixedly at a precisely selected radial location on said lower surface of said first plate means;

(b) a plurality of means for guiding each of said plurality of clamping means along a predetermined path of travel, said guide means being radially located also on said lower surface of said first plate means, and

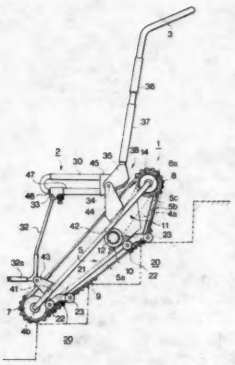
(c) a plurality of scale means radially located on said lower surface of said first plate means and associated with each said guide means to facilitate the location of each of said plurality of clamping means in position at predetermined, precisely selected substantially identical radial distances from said central axis of said first plate means so that said clamping means will provide for the precise centering of said first plate means with a potters wheel head so that the central axis of rotation of said first plate means will be in substantially coaxial relationship with the central axis of rotation of such a potters wheel head.

4,585,241

CARRIER FOR RESCUING PATIENTS

Rintaro Misawa, Tokyo, and Kou Takahashi, Tokorozawa, both of Japan, assignors to Sunwa Sharyo Manufacturing Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1983, Ser. No. 565,553
Claims priority, application Japan, Dec. 28, 1982, 57-229513; Apr. 18, 1983, 58-068215; Oct. 14, 1983, 58-192135
Int. Cl.[4] B62B *9/02*
U.S. Cl. 280—5.22 8 Claims



1. A carrier for rescuing patients comprising:

a frame having a pair of lower horizontal portions and upwardly inclined portions adjacent to said horizontal portions at rear end portions thereof;

a pair of front wheels provided on front portions of said frame;

a pair of rear wheels provided on rear portions of said frame;

a pair of crawlers engaged with said frame and said wheels such that the crawlers are movable on the frame and around the wheels;

a seat provided on said frame;

a handle connected to said seat;

brake means for slowing the rotation of either of said front and rear wheels; and

a pair of travelling wheel mechanisms provided on both sides of said frame at said lower horizontal portions thereof for moving the carrier on a flat surface, each of said travelling wheel mechanisms comprising an inverted V-shaped lever rotatably mounted about an apex of said lever relative to said frame, front and rear travelling wheels mounted on both ends of said lever, respectively, and spring means for biasing the lever to thereby pivot about the apex in a direction for raising the front travelling wheel higher than an underside level of the crawlers.

4,585,242

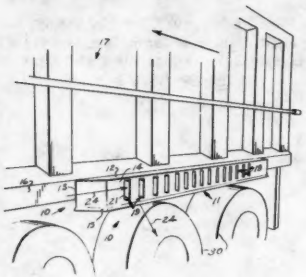
FORCED AIR RAIN DIVERTER

Dilmus L. Sparks, 5148 London Rd., Montgomery, Ala. 36109

Filed May 7, 1984, Ser. No. 607,734
Int. Cl.[4] B62B *9/16*
U.S. Cl. 280—153 R 1 Claim

1. A forced air rain diverter device for automotive vehicles, comprising, in combination, a main body and a plurality of vanes secured in said main body; said main body being of inverted, "U"-shaped configuration, and its front end and rear end being closed; said main body having a longitudinally extending opening at its lower end extending from the front end to the rear end; a plurality of spaced scoops along one of the legs of the main body; and said vanes are fixedly secured angularly to the inside surfaces of the legs of said main body at their

longitudinal side edges, and said vanes deflect impact air downward, when the vehicle to which it is attached is in



forward motion, causing rain, mist and water, in the wheel area of said vehicle, to be urged downward forcefully.

4,585,243

SPRAY CONTROLLING VEHICLE SPLASH GUARD

James R. Lockwood, Wapakoneta, and Larry A. Loeffler, Lima, both of Ohio, assignors to Lancaster Colony Corporation, Columbus, Ohio

Filed Jan. 27, 1984, Ser. No. 574,530
Int. Cl.[4] B62B *9/16*
U.S. Cl. 280—154.5 R **10 Claims**

1. A splash guard for automotive vehicles for controlling water spray generated by the wheels when traversing a moisture covered roadway comprising

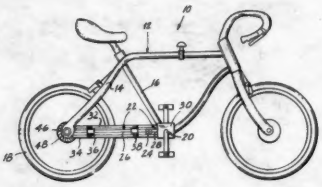
a sheet-form panel adapted to be suspended in a vertical plane from a vehicle's frame in rearwardly disposed and generally aligned relationship to a wheel thereof, said panel, when so suspended, having a vertically extending surface disposed in facing relationship to the wheel for intercepting droplets of water that may be thrown upwardly and rearwardly by the wheel and having spray controlling conformations formed on said surface for effecting a collection of water from intercepted water droplets and directing a downward flow of such collected water, said spray controlling conformations including a plurality of elongated ribs projecting outwardly from said vertically extending surface and disposed in spaced apart relationship extending generally vertically on a suspended panel, said ribs being formed with said wall surface having substantially continuous, non-planar, boundaries defined as the intersection of said side wall surfaces with said vertically extending surface that are undulated in the longitudinal direction, said side wall surface inhibiting transverse movement of water droplets incident to said side wall surfaces and vertically extending surface therebetween from between adjacent pairs of ribs and to direct such incident water droplets or dispersion thereof and water collected on said vertically extending surface generally vertically therebetween whereby water will be collected and enabled to flow downwardly between adjacent pairs of ribs to be discharged at a bottom end thereof.

4,585,244

BICYCLE IMPROVEMENT

Victor Testa, Sr, and George Spector, both of 233 Broadway RM 3615, New York, N.Y. 10007

Filed Aug. 20, 1984, Ser. No. 642,588
Int. Cl.[4] B62M *11/02*
U.S. Cl. 280—260 **1 Claim**



1. An improved bicycle of the type having a frame with a seat stay and a seat tube, a drive wheel and a crank axle wherein the improvement comprises:

(a) a drive shaft for transmitting motion from said crank axle to said drive wheel, said drive shaft composed of two sections;

(b) a universal joint connecting proximal ends of said drive shaft sections together;

(c) a gear box housing for said crank axle, said gear box housing is mounted to the proximal end of said seat tube;

(d) a pair of support arms extending parallel between said drive shaft and affixed at proximal ends to said seat stay and said gear box housing;

(e) a pair of bearing blocks, each said bearing block mounted transversely across said support arms to rotatably hold a rear section of said drive shaft in portion wherein said rear section of said drive shaft is adjustable and further comprises:

(a) a first shaft member having a square shaped internal recess;

(b) a second shaft member having a square shaped extension rod to slideably engage said recess in said first shaft member;

(c) a flexible gromment mounted over said extension rod of said second shaft member to butt against proximal ends of said first and second shaft members; and

(d) a spring mounted to the bottom of said recess in said first shaft member and to the end of said extension rod so as to bias said first and second shaft members together.

4,585,245

FRONT FORK SHOCK SLIDER FOR MOTORCYCLES AND THE LIKE

Richard Rose, 25622 Darmouth Clr., El Toro, Calif. 92630

Filed Jul. 20, 1984, Ser. No. 633,052
Int. Cl.[4] B62K *25/04*
U.S. Cl. 280—277 **7 Claims**

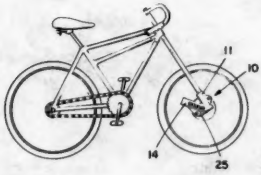
1. A shock absorbing mechanism for bicycle wheels and the like for absorbing horizontally-applied shock loads experienced by the wheel whereupon the axle and hub of the wheel are permitted to move rearwardly, or "slide", comprising:

(a) a housing including a first and a second tubular portion, the first tubular portion being adapted to be removably secured about the end of one of a pair of forks supporting

an axle for the wheel, and the second tubular portion projecting rearwardly from said first tubular portion and having a pair of laterally and oppositely-disposed slots therein and a threaded portion about the inside of the rearwardmost portion thereof;

(b) clamping means for securing said first tubular portion of said housing to one of the forks of the bicycle;

(c) an axle-carrying insert adapted to be slideably disposed within the second tubular body with an aperture therethrough for freely receiving the wheel axle therethrough;



(d) a spring adapted to be operably arranged within the second tubular portion in operable engagement with the rear end of the insert;

(e) a spring retainer plug, said plug having a threaded portion thereabout operably mateable to the internal threaded portion of said second tubular portion to retain the spring within said second tubular portion; and

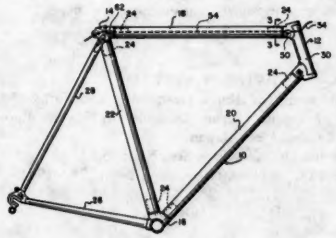
(f) a first flange member depending from said second tubular portion of said housing, said first flange member having an aperture therein for anchoring the stationary portion of the brakes for the wheel.

4,585,246

BICYCLE FRAME WITH INTERNAL CABLE

Robert L. Diekman, and Timothy J. Dietz, both of Centerville, Ohio, assignors to Huffy Corporation, Dayton, Ohio

Filed Dec. 4, 1984, Ser. No. 677,706
Int. Cl.⁴ B62K *19/30*
U.S. Cl. 280—281 R **3 Claims**



1. A bicycle frame comprising:

a head tube including a tubular segment having a hollow interior and upper and lower open ends, said segment being adapted to receive a fork stem and a handlebar stem assembly therethrough;

first lug means having a tubular shape and a hollow interior and connected at an end thereof to said tubular segment adjacent to one of said open ends thereof such that said hollow interior of said first lug means communicates with said hollow interior of said tubular segment to form a continuous passage, said first lug means including a base portion adjacent to said tubular segment and having a forward cable outlet therethrough communicating with said interior of said lug means, and a first insert portion extending outwardly from said base portion; and

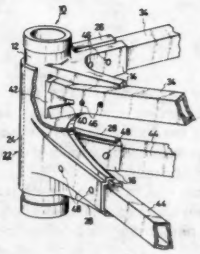
tube means having a continuous wall and a first open end telescoping over said first insert of said first lug means, whereby a cable may be inserted through said forward outlet and extend therefrom through interiors of said first lug means and tube means, said adjacent open end of said tubular segment providing access to said interior of said first lug means ajacent to said forward cable outlet.

4,585,247

BODY FRAME OF A SMALL-SIZED VEHICLE

Minoru Takada, Houya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Jul. 26, 1984, Ser. No. 634,522
Claims priority, application Japan, Jul. 26, 1983, 58-115151[U]; Aug. 4, 1983, 58-120809[U]
Int. Cl.⁴ B62K *19/22, 19/32*
U.S. Cl. 280—281 R **2 Claims**



1. A body frame of a small-sized vehicle formed of a plurality of frame elements interconnected with one another, characterized in that said body frame comprises a head pipe having a plurality of branch pieces provided with first pipe fitting grooves on their side surfaces projected therefrom in a V-shaped arrangement, a cover member provided with a plurality of second pipe fitting grooves which cooperate respectively with corresponding ones of said first pipe fitting grooves, and a plurality of frame pipes having a larger cross-section size at their tip end portions than at the other portions, said first pipe fitting grooves have a larger cross-section size at the base portions of said branch pieces than that at their tip end portions, said second pipe fitting grooves have a configuration corresponding to that of said first pipe fitting grooves, said cover member covers the side surfaces of said respective branch pieces and a main body of said head pipe and is jointed to the head pipe by means of an adhesive agent, and said plurality of frame pipes are respectively jointed by means of an adhesive agent into and held by respective engaging holes of substantially rectangular shape in cross-section defined by said first and second pipe fitting grooves.

4,585,248

ANTI-JACKKNIFE AND STEERING CONTROL SYSTEM

Ray Miller, and Ann Miller, both of P.O. Box 3286, Butte, Mont. 59701

Filed Jun. 13, 1984, Ser. No. 620,253
Int. Cl.⁴ B62D *53/08*
U.S. Cl. 280—432 **16 Claims**

3. A device to control the relationship between a tractor and its associated trailer having a longitudinal axis, comprising, in combination:

a fifth wheel;

first and second openings forward an area where the tractor meets the trailer;

a locking pin;

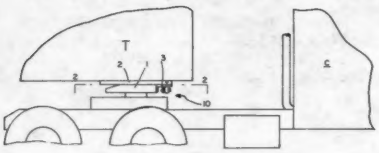
a housing, said locking pin being movably disposed within said housing;

means on said tractor to allow said locking pin to be placed

through said openings, one said opening being on the trailer and the other of the openings being on the tractor;

wherein said locking pin is provided within a housing having said second opening on said tractor, the housing having front and rear walls, a bottom and two side walls defining an interior within which said locking pin is placed when not in use;

means for extending said locking pin from a retracted position within said housing to an extended position, said housing being disposed on a leading portion of said fifth wheel and said means for extending said locking means



including first and second axles provided within said housing and extending in a direction parallel to the longitudinal axis of the tractor and its associated trailer and a pair of linkage bars each connected to one of said axles and fixed thereto; and

means for rotating said axles whereby rotation of said axles moves said linkage bars and causes said locking pin to move from a retracted to an extended position;

whereby articulation of said tractor and trailer is reflected by relative motion of the two openings, and said locking pin provides a constraint to limit the amount of motion based on the dimension of the openings.

4,585,249

SKI

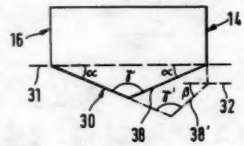
Hans-Joachim Plenk, Ruhpolding, Fed. Rep. of Germany, assignor to Jochen Plenk K.G., Ruhpolding, Fed. Rep. of Germany

Continuation of Ser. No. 256,883, Apr. 24, 1981, abandoned, which is a continuation of Ser. No. 965,868, Sep. 4, 1978, abandoned, which is a division of Ser. No. 753,696, Dec. 23, 1976, Pat. No. 4,147,377. This application Jan. 12, 1983, Ser. No. 457,332

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1975, 2558939

Int. Cl.⁴ A63C *5/04*

U.S. Cl. 280—609 **4 Claims**



1. A ski comprising an elongate body having an upper surface and a running surface, said running surface having inner and outer zones which make acute angles with respect to the transverse axis of the ski and means defining scales or steps on said running surface, said scales or steps being different in terms of their number and/or their dimensions across said running surface so as to divide said running surface into a plurality of longitudinal zones so that a skier wearing the ski can shift his weight laterally from one zone to another and thereby change the sliding characteristics of the ski.

4,585,250

RELEASE SKI BINDING

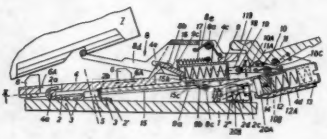
Gerhard Nowak, Biedermannsdorf; Alfred Winter; Hans P. Morbitzer, both of Vienna; Klaus Kruschik, Gumpoldskirchen, and Robert Taucher, Podersdorf, all of Austria, assignors to TMC Corporation, Walterswil, Switzerland

Filed Dec. 15, 1983, Ser. No. 561,714

Claims priority, application Austria, Dec. 16, 1982, 4569/82

Int. Cl.⁴ A63C *9/081, 9/085*

U.S. Cl. 280—618 **13 Claims**



1. In a release ski binding comprising a sole plate which, in its central region, is pivotal about a generally vertically upright axis and which can be forwardly rotated about a transverse axle which is arranged forwardly of said vertically upright axis, which sole plate is held on the ski in the skiing position by a resilient holding mechanism which effects, in response to said sole plate being swivelled relative to the ski to a predetermined angle of traverse both upwardly and also sidewardly, the opening of a locking mechanism, the improvement comprising wherein said locking mechanism has holding means in the form of at least one of (1) two lateral jaw pairs each adapted to engage the laterally facing sides of a ski boot; and (2) one lateral jaw pair each adapted to engage the laterally facing sides of a ski boot and one heel down-holding mechanism for holding a ski shoe onto said sole plate, wherein a stepping bar is provided and pivot means for pivotally supporting said stepping bar on said sole plate for movement between an upright erected position and a retracted position, wherein an erecting spring is provided for continually urging said stepping bar to said erected position, said holding means being movable between a ski boot holding position and a ski boot releasing position, said holding means being movable into said ski boot holding position in response to force applied to said stepping bar to effect a movement of said stepping bar to said retracted position against the urging of said erecting spring.

4,585,251

SEATBELT SYSTEM

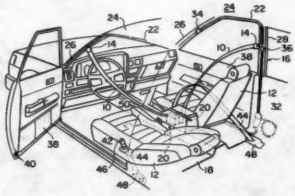
Noritada Yoshitsugu; Masakazu Hashimoto, and Yutaka Matsuzaki, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Oct. 26, 1984, Ser. No. 665,522

Claims priority, application Japan, Nov. 28, 1983, 58-183304[U]

Int. Cl.⁴ B60R *21/02*

U.S. Cl. 280—804 **13 Claims**



1. A seatbelt system for preventing a movement of an occupant in a vehicle, comprising:

(a) a webbing for restraining the occupant when the occupant seats himself in the vehicle;

(b) driving means to which one end of said webbing is se-

cured and which moves said one end of said webbing toward the front or rear end of the vehicle when the occupant enters or leaves the vehicle, said driving means including a guide rail lying on a side wall of the vehicle body, and moving said one end of said webbing moving along said guide rail;

(c) a webbing retractor which is mounted on a floor member of the vehicle and provided with a takeup shaft for winding up the other end of said webbing;

(d) a resilient member which biases said takeup shaft in a direction in which said webbing is wound; and

(e) control means which reduces the biasing force of said resilient member when said one end of said webbing is moved toward the rear end of the vehicle, said control means reducing the biasing force of said resilient member when the following set of conditions is satisfied: said one end of said webbing is at an intermediate portion of said guide rail; the amount of said webbing wound off from said takeup shaft is below a predetermined value; and the webbing tension exceeds a predetermined value;

whereby said webbing is prevented from rubbing against the body of the occupant when said webbing is automatically fastened to the occupant.

4,585,252

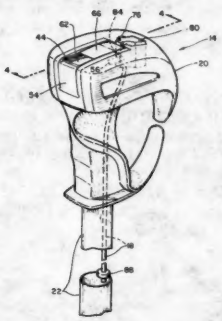
SKI SECURITY SYSTEM

John E. Cooke, 2295 Willow La., Lakewood, Colo. 80215

Filed Mar. 22, 1984, Ser. No. 593,116

Int. Cl.[4] A63C *11/00*

U.S. Cl. 280—820 **11 Claims**



1. A combined ski pole and double locking security system device wherein the ski pole includes a longitudinal shaft having a hollow interior and a handle connected to the shaft, wherein the improvement comprises in combination:

(a) a passageway through the handle said passageway extending from an exterior surface opening of the handle to connect with the hollow interior of the shaft;

(b) a flexible security line having a first end and a second end, said security line being movably disposed within said handle passage and the hollow interior of the pole shaft with said first end of said security line being located in the vicinity of the exterior surface opening of said handle passageway;

(c) first lock means having at least two portions, said first portion of said first lock means being located substantially within the handle and including a protrusion, while said second portion of said first lock means is connected to said security line in the vicinity of its said first end and carries means for releasably connecting with said protrusion included in said first portion, said first portion of said first lock means also being located to releasably connect with said second portion of said first lock means, said first lock means further including means for actuating said first lock actuating means which lock actuating means are located to be activated from the exterior of the handle; and

(d) second lock means, said second lock means also located substantially within the handle, said second lock means being in operative association with said first lock means to control the connection and release of said first and second portions of said first lock means; whereby, when said second lock means allows the release of said first and second portions of said first lock means and when further said first portion is released from said second portion of said first lock means, said second portion of said first lock means and said connected security line can be moved from and through said handle passageway to the exterior of the handle, and thence, with a portion of said security line still at the exterior of the handle, said second portion of said first lock means can be returned to said handle passageway for releasable connection with said first portion of said first lock means.

4,585,253

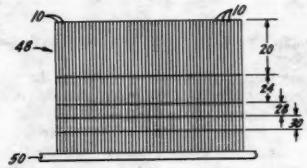
INDEXING SYSTEM FOR FILE FOLDERS

David A. Beisswanger, Bridgewater, N.J., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Mar. 12, 1984, Ser. No. 588,375

Int. Cl.[4] B42F *21/00*

U.S. Cl. 283—39 **12 Claims**



1. An indexing system for file folders of the type having a front panel and a rear panel, the panels being connected along a fold line and a portion of one panel extending beyond the other to form a tab, the indexing system comprising a pattern of different length fields on the tab, each field carrying indicia, the indicia having a size substantially equal to the field length and being visible on a folder placed in storage such that when a series of folders are juxtaposed the variable lengths of the indicia combine to create a visual pattern which directs a user's eye to the proper position of an individual folder.

4,585,254

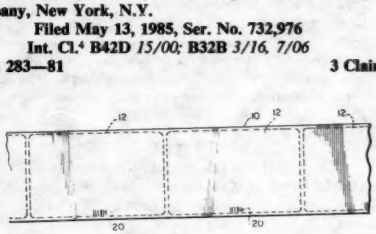
LABEL ASSEMBLY WITH VERIFYING MEANS AND METHOD OF MAKING AND USING

Samuel G. Adams, Buffalo, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed May 13, 1985, Ser. No. 732,976

Int. Cl.[4] B42D *15/00*; B32B *3/16, 7/06*

U.S. Cl. 283—81 **3 Claims**



1. A label assembly including machine readable indicia for use in verifying correspondence between identifying indicia on the label and the contents of a container to which the label is to be applied, said label assembly comprising

(a) a backing strip having a release coated surface for carry-

ing labels and machine readable indicia on the opposite surface, and

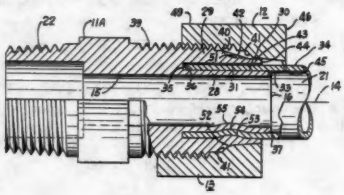
(b) labels, each having adhesive on one surface and releasably adhered thereby to said release coated surface of the backing strip and each having the opposite surface bearing indicia identifying the contents of the container to which the label is to be applied.

4,585,255

HEAVY DUTY TUBE COUPLING

Ralph G. Ridenour, Mansfield, Ohio, assignor to Universal Enterprises Inc., Mansfield, Ohio

Filed Aug. 1, 1983, Ser. No. 519,366
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—93 **21 Claims**



1. A tube coupling consisting of only two pieces:

a body and a threaded member;

interengageable threads on said body and said threaded member;

said body having an aperture for fluid under pressure;

a unitary inner sleeve and a unitary outer sleeve on said body each substantially coaxially surrounding said aperture and defining a metal tube-receiving annular groove therebetween extending into said body from a first end thereof;

said threaded member adapted to have an annular inner surface overlying said outer sleeve of said body and to have a first end adjacent said first end of said body in the assembled condition;

an annular cam surface on the inner surface of said threaded member reducing in cross-sectional area toward said first end of said threaded member;

an annular cam follower outer surface intermediate the longitudinal ends of said outer sleeve of said body reducing to a smaller diameter toward said first end of said body;

said unitary inner sleeve having an outer end at said body first end and an intermediate annular area longitudinally intermediate said outer end and the bottom of said annular groove; and

whereby with a tube in place in said annular groove the threaded member may be tightened on the body to have said cam surface and cam follower surface interact and the unitary outer sleeve crushed inwardly in an annular area intermediate the longitudinal ends thereof onto the outer surface of the tube and the tube and unitary inner sleeve crushed radially inwardly only in said intermediate annular area to form a fluid pressure-tight seal of at least several atmospheres between the body and the tube.

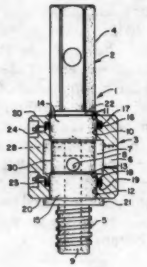
4,585,256

SIDE FEED WATER SWIVEL

Charles L. Rassieur, Creve Coeur, Mo., and Dean T. Pierce, Chandler, Ariz., assignors to Central Mine Equipment, St. Louis, Mo.

Filed Nov. 1, 1984, Ser. No. 667,095
Int. Cl.[4] F16L *27/00*; E21B *17/18*
U.S. Cl. 285—190 **2 Claims**

1. In a side feed water swivel for a hollow drill string wherein a housing embraces and extends between spaced cylindrical bearing surfaces on a rotary spindle with an axial, liquid-receiving passage in it and at least one inlet port located, axially, between said bearing surfaces, and extending between said passage and an exterior surface of said spindle, said housing having spaced upper and lower bearing surfaces each interrupted by an annular channel in which packing is mounted and a fluid-receiving chamber axially intermediate said bearing surfaces and surrounding said inlet port and communicating therewith, the improvement comprising said housing being mountable on said spindle in first and second orientations 180° different from one another, said fluid-receiving chamber embracing said inlet port and communicating therewith in both said orientations, and said packing-receiving channels being positioned asymmetrically with respect to said bearing surfaces in a direction axially along said bearing surfaces, whereby packing in said channels engages different bearing surface areas of said spindle when the said housing is in its second orientation from the areas it engages in its first orientation.

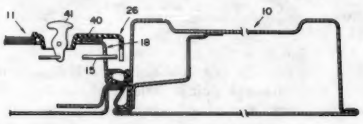


4,585,257

SHIELD ARRANGEMENT FOR A CONTROL LEVER OF A VEHICLE SLIDING-DOOR LOCK

Takayo Chikaraishi, Kawasaki, and Yasuo Yui, Isehara, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 14, 1983, Ser. No. 513,745
Claims priority, application Japan, Jul. 16, 1982, 57-124195
Int. Cl.[4] E05C *15/02*
U.S. Cl. 292—1 **15 Claims**



1. A sliding door arrangement for a vehicle comprising:

a door having an inner panel, a front face connected at an interior edge to a front edge of said inner panel and disposed substantially transverse to said inner panel, and an outer panel connected at a forward edge to an exterior edge of said front face and disposed substantially transverse to said front face and substantially parallel to said inner panel;

a lock mechanically coupled to said door and arranged to prevent opening of said door when said lock is in a locked state;

a lever mechanically coupled to said lock for controlling said lock, said lever being arranged to project from an aperture in said front face; and

a shield having a first section connected to said inner panel and projecting past said front edge of said inner panel adjacent and substantially parallel to said lever, and a second section supported by said first section and arranged parallel and opposed to said front face so that

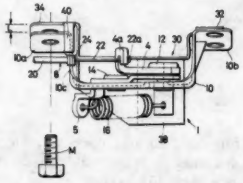
access to said lever is blocked by said shield when said door is closed.

4,585,258

HOOD LOCKING APPARATUS

Haruo Mochida, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 12, 1983, Ser. No. 522,703
Claims priority, application Japan, Sep. 8, 1982, 57-157108
Int. Cl.⁴ E05C *13/06*
U.S. Cl. 292—125 **7 Claims**



1. A hood locking apparatus for locking a hood of a vehicle to a body of a vehicle, comprising:

a striker adapted to be fixed to the hood of the vehicle; and

a locking mechanism for engaging the striker when the mechanism is fixed to the vehicle body, wherein the locking mechanism includes

a base plate having first and second mounting ends for attaching to the vehicle body, and having a notch,

a reinforcing plate disposed adjacent the base plate for disposition between the base plate and the vehicle body, having a first end welded to the first end of the base plate, and having a second end spaced from the second end of the base plate when the locking mechanism is not attached to the vehicle body,

a remote control cable for disengaging the striker from the locking mechanism, having a first end and having a second end held in the notch of the base plate,

a cable disengagement preventive piece integral with and projecting from an upper end of the second end of the reinforcing plate toward the notch in the base plate, and

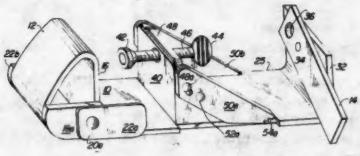
fastening means for fastening the second end of the base plate and the second end of the reinforcing plate to the vehicle body, wherein, when the second ends are fastened to the vehicle body, the second end of the base plate is no longer spaced from the second end of the reinforcing plate, and the preventive piece overlies the notch and secures the remote control cable in the notch.

4,585,259

PORTABLE DOOR LOCKING DEVICE

Aaron L. Vidas, 461 Ann St., West Chicago, Ill. 60185

Filed Nov. 21, 1984, Ser. No. 673,927
Int. Cl.⁴ E05C *17/54*
U.S. Cl. 292—339 **5 Claims**



1. A device for locking a door to a door frame comprising:

a. an elongated base member arranged to extend under the door having a first and second extremity wherein said first extremity is arranged to extend beyond the door frame when the door is in a closed position;

b. a locking member mounted to said first extremity of said base member and arranged to be selectively positioned to extend transversely beyond said base member to thereby engage the door frame;

c. means for securing said locking member in said selected position;

d. an abutment member mounted to said second extremity of said base member, affixed in substantially perpendicular relation to said base member and positioned to abut the door; and

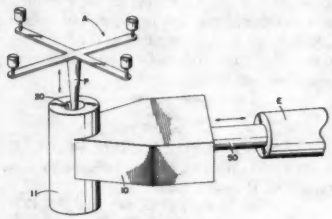
e. a first tab member pivotally mounted to said base member proximate said abutment member and arranged for selective engagement with the vertical door edge to prevent horizontal movement of the locking device.

4,585,260

DEVICE FOR GRIPPING ARTICLES FOR ROBOT-TYPE MANIPULATOR

Joseph Skovajsa, Coubron, France, assignor to Societe Invo Plastic S.A.R.L., Coubron, France

PCT No. PCT/FR83/00099, § 371 Date Jan. 12, 1984, § 102(e) Date Jan. 12, 1984, PCT Pub. No. WO83/04211, PCT Pub. Date Dec. 8, 1983
PCT Filed May 12, 1983, Ser. No. 579,908
Claims priority, application France, May 21, 1982, 82 08899
Int. Cl.⁴ B25B *1/00*
U.S. Cl. 294—145 **7 Claims**



1. In a robot-type manipulator, a device for gripping moulded synthetic articles having a part of tapered shape, which comprises:

a rigid piece having connecting means for joining said piece to the end of an arm of the manipulator,

and provided with a first, generally flared orifice with a substantially corresponding shape than said tapered part of the articles so as to receive said part, and a second orifice extending substantially perpendicular to the first orifice and opening into said first orifice,

a rod inserted in the second orifice and sliding freely in said second orifice, and

an actuating element joined to the rod so as to control displacement of said rod in the second orifice and urging said rod towards the first orifice, when a tapered part of an article is inserted in said orifice so that the rod bears against said tapered part and prevents it from moving.

4,585,261

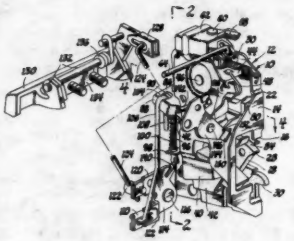
VEHICLE CLOSURE LATCH

Frederic R. Adams, Mt. Clemens; Stanley Kwasiborski, Jr., Hazel Park, and Ronald P. Rimbey, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 21, 1984, Ser. No. 673,673
Int. Cl.⁴ E05C *3/26*
U.S. Cl. 292—216 **3 Claims**

1. A vehicle body door lock, comprising, in combination, a support, a first lever pivoted intermediate the ends thereof to the support, a second lever mounted on the support and opera-

tively connected with one end of the first lever to rotate the first lever in one direction relative to the support, resilient means rotatably biasing the first lever in the other direction relative to the support, a third lever pivoted to the support, an elongated shiftable member having one end portion thereof pivoted to the third lever and having the other end portion thereof slidably received through an opening in the other end of the first lever and provided with an abutment means engageable with the first lever under the bias of the resilient means, and cooperating adjustable means in the third and on the support controlling the rotatable position of the third lever relative to the support to take up lost motion between the abutment means of the shiftable member and the first lever, rotation of the third lever shifting the shiftable member and rotating the first lever in the one direction against the bias of the resilient means, rotation of the first lever in the one direction by the second lever occurring independently of movement of the shiftable member as the other end of the first lever slides relative to the other end portion of the shiftable member and away from the abutment means.

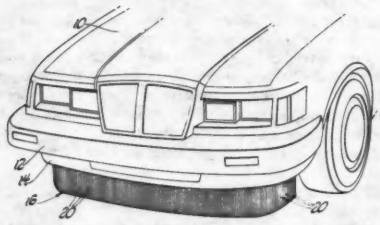


4,585,262

AIR DAM FOR MOTOR VEHICLE

Robert R. Parks, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 7, 1985, Ser. No. 709,417
Int. Cl.[4] B62D *37/00*
U.S. Cl. 296—1 S **2 Claims**



1. An air dam for attachment to the underside of a motor vehicle and extending downwardly therefrom into proximity with the road surface and potential interference with curbs or like obstructions extending above the road surface; comprising

a plurality of bristles having upper ends and lower ends; and

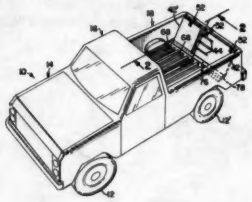
a mounting bracket adapted for attachment on the underside of the motor vehicle and mounting the plurality of flexible bristles in closely packed relationship along the length of the mounting bracket in a generally vertical depending orientation whereby the depending bristles normally function to provide an air deflecting dam and flexibly yield upon contact with an obstruction so that the bristles are restored to their normal air dam function when the motor vehicle is moved away from the obstruction.

4,585,263

AIR DEFLECTOR

Jay A. Hesner, 9536 Taylor St. N.E., Blaine, Minn. 55434

Filed Sep. 14, 1984, Ser. No. 650,650
Int. Cl.[4] B62D *37/00*
U.S. Cl. 296—1 S **9 Claims**



1. Apparatus for reducing drag upon an open vehicle, such as a pickup truck having an open bed defined between lateral walls thereof and a generally vertical surface, such as a tailgate, extending generally transversely to a direction of air flow through the bed, comprising:

(a) a diversion element positionable between the lateral walls of the pickup truck, said element including a panel having a deflecting surface formed therein; and

(b) at least one clamping member permanently attached to said element for detachably securing said diversion element to the tailgate of a pickup truck, said member having a pair of generally parallel fingers spaced from one another at a distance to permit said member to clamp onto a conventional pickup truck tailgate without damage thereto; and

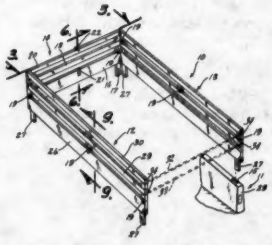
(c) wherein said panel deflecting surface is, when said diversion element is secured to a tailgate, disposed obliquely to the horizontal with said panel in a desired orientation and with an edge of said panel, distal from said clamping member, engaging the floor of the truck bed.

4,585,264

FOLDING RACK FOR TRUCKS

Roger Miller, 2232 E. Vista, Missoula, Mont. 59802

Filed May 23, 1984, Ser. No. 613,316
Int. Cl.[4] B62D *33/08*; B60P *3/42*
U.S. Cl. 296—3 **5 Claims**



1. A folding rack for a truck having a truck bed with an inside and an outside comprising:

a first side assembly including:

a frame having an inside and an outside with respect to said truck bed;

means for removably attaching said frame to one side of said truck bed;

a first rack member having an extended and a folded position thereof;

first hinge means attached to a top portion of said outside of said frame and to the outside of said first rack member when in the extended position thereof for operably pivotally attaching said first rack member to said frame between said extended position whereby said first rack member is directly above said frame and said folded position whereby said first rack member is folded along the outside of said frame, said first hinge means including means for biasing said first rack member to one of the folded or extended positions thereof;

a second rack member having an extended and folded position thereof;

second hinge means attached to the inside of said first rack member and to the inside of said second rack member when in the extended position thereof for pivotally attaching said second rack member to said first rack member between said extended position in alignment with said first rack member and said folded position along the outside of said first rack member, said second hinge means including means for biasing said second rack member to one of the folded or extended positions thereof;

means for operably locking one end of said first rack member to one end of said frame when the first rack member is in said folded position thereof;

means for operably locking one end of said second rack member to the other end of said first rack member when the second rack member is in the folded position thereof with respect to the first rack member;

a second side assembly including:

a second frame having an inside and an outside with respect to said truck bed;

means for removably attaching said second frame to the other side of the truck bed;

a third rack member having an extended and folded position thereof;

third hinge means attached to an outside top portion of said other side of the second frame and to the outside of said third rack member when in the extended position thereof for pivotally attaching said third rack member to said second frame between said extended position whereby said third rack member is directly above said second frame and said folded position whereby said third rack member is folded along the outside of said second frame;

a fourth rack member having an extended and folded position thereof;

fourth hinge means attached to a a top inside portion of said third rack member when in the extended position thereof and to the inside of said fourth rack member when in the extended position thereof for pivotally attaching said fourth rack member to said third rack member between said extended position in alignment with said third rack member and said folded position disposed along the outside of said third rack member;

means for operably locking said third rack member to said second frame when the third rack member is in said folded position thereof;

means for operably locking the fourth rack member to the third rack member when the fourth rack member is in the folded position thereof with respect to the third rack member;

a front assembly including:

a third frame having an inside and an outside with respect to said truck bed;

means for removably attaching said third frame to the front of said truck bed;

a fifth rack member having an extended and a folded position thereof;

fifth hinge means attached to an inside top portion of said third frame and to the inside of said fifth rack member when in the extended position thereof for pivotally attaching said fifth rack member to said third frame between said extended position whereby said fifth rack member is directly above said third frame and a folded position whereby said fifth rack member is folded along the inside of said third frame;

a sixth rack member having an extended and a folded position thereof;

sixth hinge means attached to an outside top portion of said fifth rack member when in the extended position thereof and to the outside of said sixth rack member when in the extended position thereof for pivotally attaching said sixth rack member to said fifth rack member between said extended position in alignment with said fifth rack member and said folded position disposed along the inside of said fifth rack member;

means attached to said third frame for operably preventing relative movement of said fifth and sixth rack member and said third frame when the fifth and sixth rack members are in the folded position thereof;

locking latches positioned at a front side of the folding rack for independently, selectively, operably attaching said first side assembly to said front assembly when said first, second, fifth and sixth rack members are in the extended positions thereof; and

locking latches positioned at a front side of the folding rack for independently, selectively, operably attaching the second side assembly to said front assembly when the third, fourth, fifth and sixth rack members are in the extended position thereof for causing the respectively interconnected assemblies to help support each other and for permitting either one of the first and second side assemblies to be independently lowered for permitting loading or unloading from one side while the other side assembly and the front assembly can be up and connected together to support the cargo within said rack wherein the attachment and disassembly of the side and front assemblies in the extended position are facilitated.

4,585,265

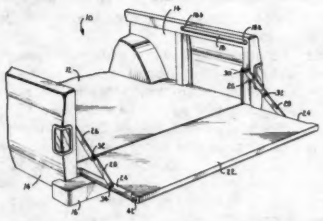
THREE POSITION TAILGATE

Curt H. Mader, 13625 Spring St., Grandview, Mo. 64030

Filed Aug. 27, 1984, Ser. No. 644,223

Int. Cl.[4] B62D *35/00*

U.S. Cl. 296—1 S **13 Claims**



1. A tailgate construction for a vehicle having a bed and a tailgate opening presented between opposite vehicle sides having upper edges and lower edges adjacent the bed, said tailgate construction comprising:

a tailgate having opposite ends and upper and lower edges and a length to extend between the sides of the vehicle;

means for mounting said tailgate in extension between the sides for hinged movement about a generally horizontal hinge axis adjacent the lower edge of the tailgate between a closed position wherein the tailgate has a generally vertical orientation to close the tailgate opening and an open position wherein the tailgate has a generally horizontal orientation at an elevation to form a rearward extension of the bed;

releasable means for latching said tailgate in the closed position thereof; and

means for supporting said tailgate in extension between the sides of the vehicle adjacent the upper edges thereof at an

elevated position wherein the tailgate has a generally horizontal orientation and is elevated above the bed with the lower edge of the tailgate located behind the upper edge thereof to permit air flow through the tailgate opening when the vehicle is moving, said tailgate being movable among the open, closed and elevated positions while remaining in extension between the sides.

4,585,266

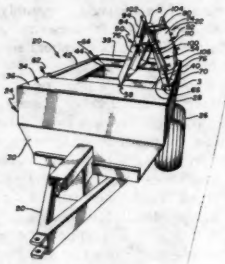
MANURE SPREADER HAVING SHIFTABLE COVER

Richard G. Steinberg, Clintonville, Wis., assignor to H & S Manufacturing Co., Inc., Marshfield, Wis.

Filed Mar. 9, 1984, Ser. No. 586,868

Int. Cl.[4] B60P *7/02*; B65D *43/02*; E05D *7/02*

U.S. Cl. 296—100 **6 Claims**



1. A shiftable cover for a farm implement or the like having structure defining an opening with a peripheral edge having opposed sides, including:

a first plate covering a portion of said opening;

a second plate for covering an additional portion of said opening;

means for hingeably, operably coupling said first and second plate along a pivot axis;

means operably coupled with said first and second plates for pivotally shifting said first and second plates relative to each other about said pivot axis whereby said plates are selectively shifted between a first position substantially covering said opening and a second position wherein said opening is exposed;

pivot means mounted to said first and second plates adjacent the opposite sides of said opening;

pivot restraining means mounted on said sides and selectively engagable with said pivot means;

said pivot means of one of said plates maintaining operable engagement with said opening peripheral edge while said plates are shifted between said first and second positions, whereby said opening peripheral edge is scrapingly cleaned by the operable engagement of said pivot means with said edge.

4,585,267

TOP COVER PANEL FOR A CONTAINER

David W. Friesen, Box 6, R.R. #3, Winkler, Manitoba, Canada (R0G 2X0)

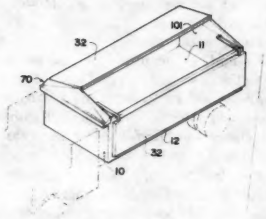
Filed Apr. 10, 1984, Ser. No. 598,587

Claims priority, application United Kingdom, Apr. 15, 1983, 8310270

Int. Cl.[4] B60J *7/10*

U.S. Cl. 296—100 **19 Claims**

1. A cover arrangement for a container having a vertical side panel and an open top, the cover arrangement comprising a substantially rigid cover panel, means for mounting the cover panel on the container for pivotal movement from a first position in which the cover panel lies over the open top to a second position in whic the cover panel hangs downwardly alongside and parallel to the vertical side panel, said mounting means including a pair of pivotal members each having one end attached to said container for pivotal movement relative thereto and arranged relative to the cover panel at positions spaced longitudinally thereof, an elongate torque transmission member interconnecting said pivotal members at respective ends thereof remote from said one end for common pivotal movement of said pivotal members and torque transmission member relative to said container, means mounting said cover panel on



said pivotal members and said torque transmission member for pivotal movement relative thereto such that said torque transmission member is arranged at one edge thereof and rigid coupling means for interconnecting said cover panel and said vertical side panel whereby said pivotal movement of said pivotal members and torque transmission member causes said cover panel to move from said first position to said second position.

4,585,268

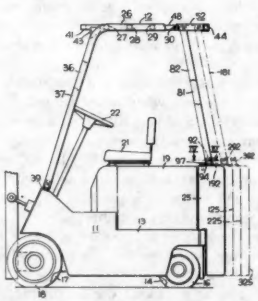
OVERHEAD GUARD FOR LIFT TRUCKS OF DIFFERENT LENGTHS

Terry R. Downing, Glenwood, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 15, 1984, Ser. No. 660,640

Int. Cl.[4] B62D *25/06*

U.S. Cl. 296—102 **4 Claims**



1. In combination with a counterbalanced lift truck of the type having a frame supporting a counterweight at its rear end and an operator's station forwardly of the counterweight, an overhead guard arrangement comprising:

an overhead guard including

a generally horizontal top portion above said operator's station,

a pair of laterally spaced front legs rigidly secured to said top portion and extending downwardly and forwardly to bottom ends detachably connected to laterally spaced points on the front of said lift truck frame,

a pair of longitudinally spaced and transversely extending beams on the rear part of said top portion, and

a pair of longitudinally extending support beams on said

top portion having corresponding front and rear ends rigidly secured to said transversely extending beams, respectively, said support beams each including a top wall, laterally spaced vertical side walls secured to and extending downwardly from said top wall, and front and rear longitudinally spaced sets of transversely aligned openings formed in said side walls, said support beams being downwardly open between said side walls adjacent said aligned openings to receive support posts,

a pair of laterally spaced generally upright support posts connected at their bottom ends to laterally spaced points on said counterweight and

a pair of horizontal pin means connecting the upper ends of said support posts to said laterally spaced vertical side walls of said support beams and spaced beneath said top walls, respectively, said pin means extending through corresponding sets of said openings in said side walls of said support beams, whereby an accidental dropping of a load on the overhead guard that shears a said pin means will cause the overhead guard to drop only until the top wall over the sheared pin engages the top of the post beneath the sheared pin.

4,585,269

VEHICLE SUN ROOFS

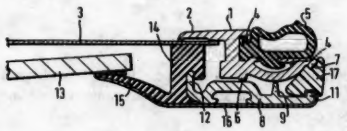
John B. Lievesley, Kidderminster, England, assignor to Autoroofs Limited, Great Britain

Filed Jun. 29, 1984, Ser. No. 626,199

Claims priority, application United Kingdom, Jul. 4, 1983, 8318094

Int. Cl.⁴ B60J *7/04*

U.S. Cl. 296—214 **11 Claims**



1. A frame for a vehicle sun roof intended for a vehicle having a hard head liner, said frame comprising an outer upper frame section adapted to fit into an aperture in a vehicle roof and to engage said roof around the edge of said aperture, an inner lower frame section adapted to be located below the vehicle roof and to be secured to said outer frame section, and a support member adapted to be fitted to the outer peripheral portion of said inner lower frame section and to engage the underside of said vehicle roof around the edge of said aperture, said support member being made of resilient material and being provided with an outwardly extending lip adapted to engage a hard head liner of the vehicle roof around the edge of an aperture formed therein to accommodate said frame in order to conceal the aperture in said head liner from view and to provide a support for said head liner.

4,585,270

SUPPORT STRUCTURE FOR A PIECE OF FURNITURE

Mark Singer, 15 Madison St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 332,371, Dec. 21, 1981, Pat. No. 4,421,356, which is a continuation-in-part of Ser. No. 236,756, Feb. 23, 1981, abandoned. This application Dec. 16, 1983, Ser. No. 562,409

The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.

Int. Cl.⁴ A47C *4/02*

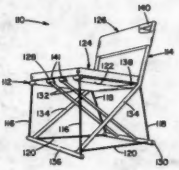
U.S. Cl. 297—16 **13 Claims**

1. A substantially rigid support structure, comprising

a pair of transversely spaced generally parallel rigid columnar struts, the axes of said struts being inclined with respect to the horizontal,

an integral rigid member, oppositely inclined with respect to the horizontal, having two upper ends spaced from each other and two lower ends spaced from each other and positioned intermediate and spaced from said struts,

a flexible tension member connecting each lower end of each strut with one lower end of the integral rigid member at the side adjacent said strut,



a flexible tension member connecting each lower end of each strut with one upper end of the integral rigid member at the side adjacent said strut,

a flexible tension member connecting each upper end of each strut with one lower end of the integral rigid member at the side adjacent said strut,

a flexible tension member connecting each upper end of each strut with one upper end of the integral rigid member at the side adjacent said strut,

and means for maintaining the upper end of said struts spaced apart from each other.

4,585,271

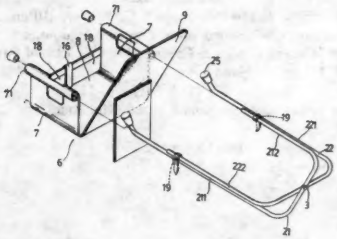
COLLAPSIBLE BABY CHAIR

Ching-Tang Wu, No. 33, Lane 103, Hansheng E. Rd., Panchiao City, Taipei Hsien, Taiwan

Filed Jul. 25, 1984, Ser. No. 634,388

Int. Cl.⁴ A47B *83/02*

U.S. Cl. 297—174 **1 Claim**



1. A collapsible baby chair capable of being clamped on a rigid surface to provide a seat for a baby, comprising:

a supporting frame adapted to clamp a rigid surface, including a first U-shaped member and a second U-shaped member, having a pair of longitudinal sections and a transverse section respectively, said first and second U-shaped members being pivoted with each other intermediately at said transvese sections thereof and thus capable of being swung with respect to each other, thereby the angle between said first and second U-shaped members being varied to adapt the thickness of the rigid surface to be clamped;

a seat member having two sides being suspended from said pairs of longitudinal sections of said first and second U-shaped members.

4,585,272

CHAIR HAVING A BACK COMPRISING A PLURALITY OF ARTICULATED SEGMENTS

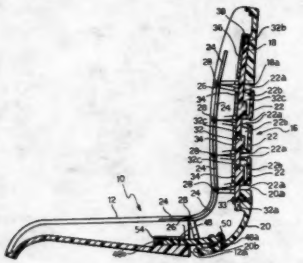
Luciano Ballarini, Bologna, Italy, assignor to Castelli S.p.A., Bologna, Italy

Filed Oct. 24, 1983, Ser. No. 544,896

Claims priority, application Italy, Oct. 22, 1982, 68229 A/82; Jul. 28, 1983, 67817 A/83

Int. Cl.⁴ A47C 7/14

U.S. Cl. 297—284 **44 Claims**



1. A chair comprising a seat, a backrest connected to said seat for movement between an erect position and a partially reclined position relative to said seat, said backrest, being constituted by a series of at least three superimposed segments disposed adjacent to each other, with the lower segment being disposed adjacent to said seat, articulated connections having horizontal axes disposed between each pair of adjacent segments and between said lower segment and said seat with said lower segment being articulated to said seat about a horizontal axis located at a level corresponding to the sitting plane of said seat, and resilient means biasing said segments towards the erect position including first resilient means operatively connected to all of the segments of the backrest and second resilient means independent from the first resilient means connected to the lower segment of the backrest and the seat.

4,585,273

VEHICLE SEAT

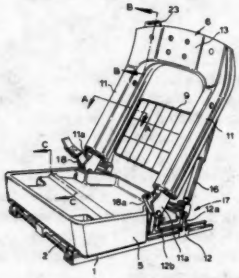
Derek J. Higgs, Eastwood; Russell G. Murty, Billericay, and Alan Robins, Chelmsford, all of United Kingdom, assignors to Hawtal Whiting Design & Engineering Co., Ltd. of Pembroke House, Pilsen, England

Filed Jul. 27, 1983, Ser. No. 517,667

Claims priority, application United Kingdom, Sep. 2, 1982, 8225012

Int. Cl.⁴ A47C 7/02

U.S. Cl. 297—452 **7 Claims**



1. In a vehicle seat frame comprising a seat back frame portion and a seat pan frame portion, the improvement residing in that the said seat back frame portion and the said seat pan frame portion are structurally separate, that at least one of said frame portions is moulded from foamed plastics material which is reinforced by an internal skeleton of fabricated sheet metal, and that the seat back frame portion mounts a source for each of at least two seat belts, includes seat belt anchorage points, and is mountable so as to transmit restraint loads from the sources and anchorage points for the seat belts to the vehicle body without transmitting them through the seat pan frame portion.

4,585,274

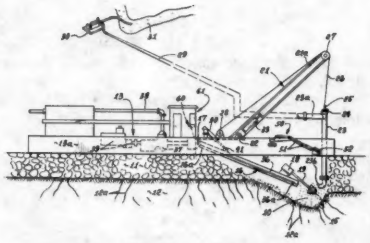
MINERAL AND METAL PARTICLE RECOVERY APPARATUS AND METHOD

Donovan B. Grable, #17 Seasons Ct., Madera, Calif. 93637

Filed May 18, 1984, Ser. No. 611,897

Int. Cl.⁴ E02F 3/88

U.S. Cl. 299—7 **9 Claims**



1. Apparatus for recovering metallic particles from a recovery hole formed in a sub-surface formation containing said particles comprising

(a) a barge,

(b) a rotating cutter head supported by the barge for controlled bodily movement at the recovery hole and for cutting the formation adjacent said hole to form cuttings mixed with said particles,

(c) hydraulic conduit means supported by the barge to deliver flushing water to the vicinity of the cutter in said recovery hole, thereby to produce a slurry of water, cuttings and metallic particles,

(d) a suction duct supported by the barge, and having an intake located to draw said slurry from the hole for subsequent processing to separate and recover the metallic particles,

(e) a ladder having one end carried by the barge, the ladder extending from the barge toward the recovery hole, there being a cutter drive carried by the ladder, and said suction duct carried by the ladder,

(f) means carried by the barge supporting the ladder to pivot about a generally vertical axis so that the ladder, the suction duct and said intake sweep in an arc, generally horizontally, and an actuator on the barge connected with the ladder to effect said ladder pivoting,

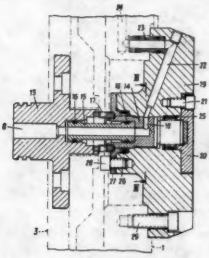
(g) and a boom pivotally carried by the barge, the boom supporting said hydraulic conduit means for controlled bodily movement, relative to the recovery hole and relative to the suction intake and cutter head, the conduit means including a generally vertically extending metallic tubular collar, having a discharge outlet to direct water to flow toward the intake, the boom pivotally supported to maintain said outlet near said intake despite ladder pivoting.

4,585,275

PROCESS FOR SPRAYING THE BITS AND/OR THE FACING WITH PRESSURIZED LIQUID AS WELL AS APPARATUS FOR PERFORMING THIS PROCESS

Herwig Wrulich; Alfred Zitz; Otto Schetina, all of Zeltweg, and Franz Schöffmann, Leoben, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Mar. 29, 1984, Ser. No. 594,525
Claims priority, application Austria, Apr. 11, 1983, 1282/83
Int. Cl.[4] E21C *35/22*
U.S. Cl. 299—81 6 Claims



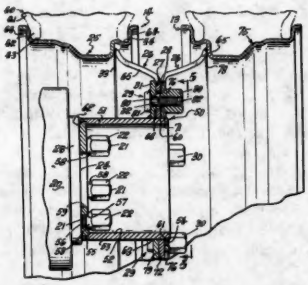
1. Apparatus for spraying a cutting bit and mine face with a cooling fluid comprising a cutting arm having a non-rotating axial fluid supply bore, a plurality of radial bores extending from the axial fluid supply bore, and positioned circumferentially around the fluid supply bore, said radial bores being arranged over a center angle of less than 180°, a rotating cutting head coaxially disposed about the axial fluid supply bore, the cutting head having at least one radial bore leading to a discharge port for directing cooling fluid to the mine face the radial bore in the cutting head being positioned such that on rotation of the cutting head the radial bore aligns with the radial bores from the axial fluid supply bore thereby imparting a pulsating fluid flow.

4,585,276

SINGLE AND DUAL WHEEL CONFIGURATION FOR VEHICLES

Raymond J. Tirheimer, 8510 Cypress Point, Buena Park, Calif. 90621

Filed Aug. 13, 1984, Ser. No. 639,810
Int. Cl.[4] B60B *11/00*
U.S. Cl. 301—36 R 10 Claims



1. For use in a motor vehicle having a rotatable drum and circular array of wheel studs, a vehicle wheel mounting system comprising:

a cylindrical adapter hub having a cylindrical body defining inner and outer surfaces and first and second ends, a drum flange extending inwardly from said first end and defining a first plurality of apertures spaced in a circular array corresponding to that of said wheel studs, said wheel studs passing through said first plurality of apertures, a wheel mounting flange, extending outwardly from said outer surface near said second end, defining a second plurality of apertures arranged in a circular array, and an alignment surface having a predetermined outer diameter and extending from said wheel mounting flange to said second end;

a first plurality threaded fasteners cooperating with said plurality of wheel studs to secure said drum flange to said rotatable drum;

a first wheel having first tire supporting means for receiving and supporting a first tire and defining a substantially planar first hub mounting surface configured to be mateable with said wheel mounting flange and defining a third plurality of apertures spaced in a circular array corresponding to that of said second plurality of apertures in said wheel mounting flange, and a first centering aperture centered within said wheel and having a predetermined inner diameter;

a first plurality of threaded bolts passing through said second and third pluralities of apertures; and

a second plurality of threaded fasteners cooperating with said first plurality of bolts when said wheel is mounted to said cylindrical adapter hub to secure said first hub mounting surface to said wheel mounting flange, said alignment surface extending through said first centering aperture to center and support said first wheel with respect to said cylindrical adapter hub;

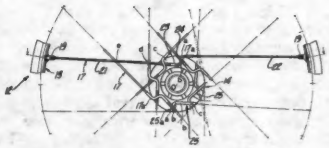
said circular array of said wheel studs said first, second and third pluralities of apertures, said first centering aperture and said alignment surface all being substantially concentric.

4,585,277

WIRE WHEEL WITH SPOKES HAVING CRANK SHAPED SECTION

Masae Watanabe, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan

Filed Feb. 19, 1985, Ser. No. 702,817
Claims priority, application Japan, Feb. 20, 1984, 59-28685
Int. Cl.[4] B60B *1/04*
U.S. Cl. 301—56 9 Claims



1. In a wire wheel comprising a hub defining an axis of rotation, a rim, and a plurality of spokes affixed to said rim and said hub for affixing said rim to said hub, said spokes having a first end affixed to said rim, a second end affixed to said rim at a point circumferentially spaced from the point of attachment of the first end to the rim and an intermediate portion having a crank shape in side elevation consisting of at least two bent sections connected by a straight section and affixed to said hub, the improvement comprising said hub being formed with a plurality of recesses each adapted to receive a respective spoke intermediate portion for fixing said spokes to said hub, said recesses being configured so that the straight section of the intermediate portion is inclined so that its radially inwardmost bent portion is positioned closer to a central plane perpendicular to said axis of rotation and passing through the center of said rim than the radially outermost bent portion.

4,585,278

BRAKE SYSTEM FOR VEHICLE COMBINATIONS

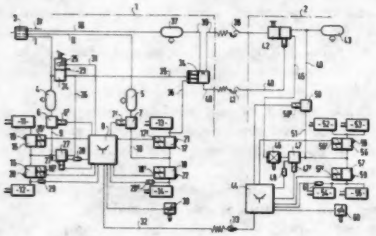
Ingolf Grauel, Vaihingen/Enz, and Werner Stumpe, Kornwestheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 26, 1984, Ser. No. 665,260

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1983, 3346919

Int. Cl.[4] B60T 8/02, 13/66

U.S. Cl. 303—7 1 Claim



1. A brake system for controlling brakes on a primary and a secondary vehicle in tandem in which:

said primary vehicle includes at least three pneumatic pressure lines operatively connected in said brake system for operating and controlling brakes on said primary and said secondary vehicle;

a foot operated braking signal transducer which includes means for controlling an electrical signal to an electronic switching device and means for controlling one of said pneumatic pressure lines;

2/2 way magnetic valves for electrically controlling pneumatic pressure from said one pneumatic pressure line to said brakes on said primary vehicle;

electromagnetic blocking valves on said primary vehicle for blocking pneumatic pressure from said one pneumatic pressure line to said brakes on said primary vehicle during operation of said 2/2 way magnetic valves for applying pneumatic pressure to said brakes on said primary vehicle;

an electronic switching device on said primary vehicle for processing different electrical signals and providing an output for controlling said 2/2 way magnetic valves and for producing a control signal for said secondary vehicle;

a pneumatic control valve on said primary vehicle which is controlled by pneumatic pressure on said primary vehicle for controlling pneumatic pressure over first and second pneumatic pressure lines to said secondary vehicle;

and said secondary vehicle includes pneumatic operated brake circuits which are connected to said first and second pneumatic pressure lines on said primary vehicle for pneumatic operation of brakes on said secondary vehicle and means for connecting an electrically operated brake circuit on said secondary vehicle to said control signal on said primary vehicle produced for said secondary vehicle.

4,585,279

LOAD RESPONSIVE BRAKE CONTROL VALVE

Shigeaki Doto, Kobe, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Jul. 17, 1984, Ser. No. 631,673

Claims priority, application Japan, Jul. 20, 1983, 58-113628[U]

Int. Cl.[4] B60T 8/18

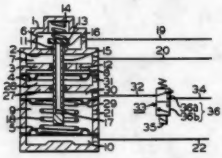
U.S. Cl. 303—22 R 10 Claims

1. A proportional type load responsive control valve for a vehicle brake system comprising:

(a) a housing having a supply inlet, at least one control inlet, a pilot inlet, a delivery outlet, and an exhaust outlet;

(b) valve means having an application position for establishing fluid pressure communication between said supply inlet and said delivery outlet, and a release position for establishing fluid pressure communication between said delivery outlet and said exhaust outlet;

(c) first piston means subject on one side to a load responsive control fluid pressure corresponding to the vehicle load condition at said at least one control inlet for urging movement of said valve means toward said application position;



(d) second piston means subject to the fluid pressure effective at said delivery outlet for urging movement of said valve means toward said release position; and

(e) said first piston means being further subject on the opposite side to a pilot pressure at said pilot inlet only when a release condition of vehicle braking exists for counteracting said control fluid pressure at said one side and thereby preventing said movement of said valve means toward said application position.

4,585,280

METHOD AND SYSTEM OF CONTROLLING BRAKING PRESSURE IN A VEHICLE BRAKE

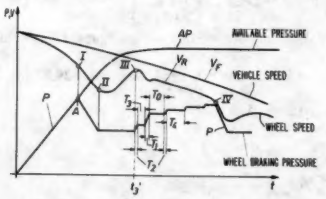
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 23, 1984, Ser. No. 582,936

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1983, 3303916

Int. Cl.[4] B60T 8/70, 8/64

U.S. Cl. 303—100 20 Claims



1. In a vehicle braking system, in which the vehicle has

means (1, 2) for providing a signal representative of speed, acceleration and deceleration of a wheel of the vehicle,

means (5a, 5b, 6a, 6b) for applying, selectively, higher or lower braking pressure on the wheel,

and control means (3, 4) responsive to said signals and controlling the braking pressure, in steps or pulses, such that, sequentially, braking pressure pulses of respectively controlled different pressure levels follow each other,

a method of controlling the braking pressure including the steps of

applying braking pressure;

sensing wheel deceleration as the result of applied braking pressure;

determining if said wheel deceleration exceeds a predetermined level, and, if so, inhibiting further increase of braking pressure;

and, thereafter, increasing braking pressure in a further pressure increase phase, wherein, in accordance with the

invention, the pressure increase phase comprises the steps of

(a) increasing braking pressure during a first time interval which is short with respect to an oscillation period of the wheel if subjected to a brake pressure increase pulse, so that the braking pressure increase will be small and short;

(b) then maintaining braking pressure for a second interval of time which, also, in short with respect to said oscillation period;

(c) then increasing braking pressure during a third interval of time which is longer than said first time interval;

(d) then maintaining braking pressure during a fourth interval of time which is longer than said third time interval;

and then repeating, alternately, sequentially, the pressure increase step (a) and the pressure maintenance step (d).

4,585,281

PRESSURE-OPERATED BRAKE SYSTEM FOR AUTOMOBILES

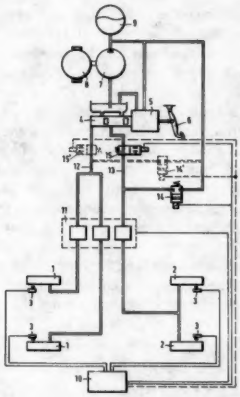
Otmar Schnürer, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Apr. 13, 1984, Ser. No. 599,763

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1983, 3313519; Apr. 22, 1983, 3314712

Int. Cl.⁴ B60T *8/40*

U.S. Cl. 303—116 **5 Claims**



1. A pressure-actuated brake system for a motor vehicle having a plurality of wheels with corresponding wheel brakes comprising electronic brake slip regulating means including sensor means for monitoring the condition of wheel motion at each of the wheels to produce a signal indicating danger of wheel brake locking at the corresponding wheel and antilocking regulating means responsive to signals received from the sensor means to produce control signals, a main brake cylinder, brake pedal means for actuating said main brake cylinder, a hydraulic unit arranged between the main brake cylinder and the wheel brakes and responsive to control signals from the antilocking regulating means to apply pressure to the wheel brakes in such manner that the brake pressure of any locking-endangered wheel is reduced for such time as the danger of locking continues, and wherein the electronic regulating means transmits a control signal to hydraulic control means to produce an increase in the brake pressure, above the pressure resulting from actuation of the main brake cylinder by the brake pedal means, for at least some of those wheels at which a brake slip regulation has not yet commenced in response to initiation of the brake slip regulation at one wheel.

4,585,282

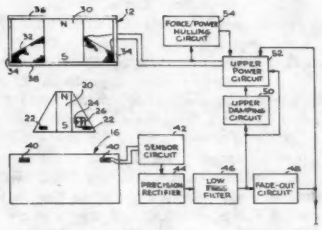
MAGNETIC LEVITATION SYSTEM

Robert W. Bosley, 18104 Hoffman Ave., Cerritos, Calif. 90701

Filed Jul. 19, 1983, Ser. No. 515,956

Int. Cl.⁴ F16C *39/06*

U.S. Cl. 308—10 **92 Claims**



1. Magnetic levitating apparatus comprising:

a first magnetic element mounted to support an object to be levitated in a magnetic field;

a magnetic member including a second magnetic element for placement in a position to be levitated by magnetic field interaction between the two magnetic elements, at least one of said magnetic elements being a permanent magnet;

electromagnetic induction means for monitoring the position and velocity of the magnetic member relative to a null position, the electromagnetic induction means comprising target coil means mounted for movement with the magnetic member and stationary sense coil means inductively coupled to the target coil means;

electromagnetic field generating means including at least one force generating coil for modifying the magnetic levitation field; and

circuit means coupled between the sense coil means and the electromagnetic field generating means for selectively controlling an electrical current in the force generating coil in response to electrical signals from the sense coil means.

4,585,283

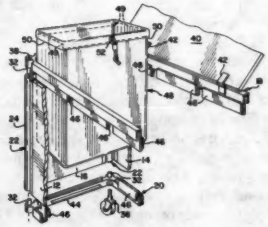
MULTI-BAG LAUNDRY HAMPER

C. Peter Redmon; Samuel C. Redmon, both of Peru, Ind., and Henry P. Glass, Northfield, Ill., assignors to W. C. Redmon Company, Peru, Ind.

Filed Aug. 28, 1984, Ser. No. 645,114

Int. Cl.⁴ A47B *46/00*

U.S. Cl. 312—250 **11 Claims**



1. A multiple-bag hamper arrangement, comprising:

a box-like hamper including vertical front and rear panel members positionable in spaced apart relation, and a pair of vertical side panel members positionable to extend between respective opposite ends of said front and rear panel members; and

a plurality of hamper bags individually removably position-

able within said hamper, said hamper including means for removably supporting each said hamper bag;

said hamper including a generally rectangular upper frame positionable in contiguous relation with upper edge portions of said front, rear, and side panel members, said hamper further including a generally rectangular lower frame positionable in contiguous relation with lower edge portions of said front, rear, and side panel members, said upper and lower frames being of an identical configuration to each other,

said hamper including first and second pairs of corner members respectively positionable at junctions of said front and side panel members, and at junctions of said rear and side panel members, for joining said panel members together, each said corner member defining a pin-receiving opening at the upper ends and at the lower ends thereof,

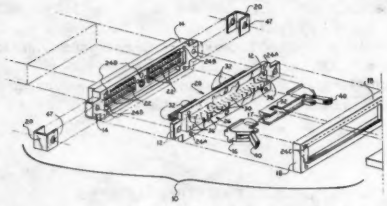
each of said generally rectangular upper and lower frames including an integral pin portion at each of the four corners thereof, said pin portions being respectively positionable in the pin-receiving openings of said first and second pairs of said corner members when said upper and lower frames are positioned in contiguous relation with the edge portions of said front, rear, and side panel members.

4,585,284

TRANSITION ADAPTER CONNECTOR EMPLOYING A PRINTED CIRCUIT BOARD

James R. Koser, Elizabethtown, and Ralph A. Papa, Harrisburg, both of Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1984, Ser. No. 653,381
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—17 C **10 Claims**



1. A transition adapter connector assembly for connecting electrical systems between input/output signal paths comprising:

(a) a circuit board having a first and second side with signal and ground leads on at least one side, in electrical contact with multiple through holes, each through hole having an electrical terminal, with first and second contact ends, mounted therein in electrical contact with the hole at the first contact end, at least some of the terminals projecting the second contact end from the first side of the board and the remainder projecting the second contact end from the second side of the board,

(b) a first dielectric housing having multiple terminal receiving channels mating with the second contact end of the terminals on the first side of the circuit board,

(c) a second dielectric housing having multiple terminal receiving channels mating with the second contact end of the terminals on the second side of the circuit board, said second dielectric housing having at least one latch member adapted to mate with a notch in a mating ribbon cable connector, and

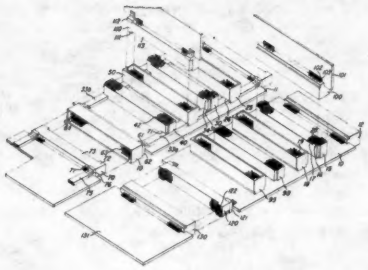
(d) means for holding the assembly together, including a cover enclosing the second dielectric housing having holes which are aligned axially with corresponding axially aligned holes in the circuit board and the first dielectric housing and a fastening means mounted through said holes for securing said housing and board together.

4,585,285

MULTI-ROW PRESS FIT CONNECTOR FOR USE WITH BUS BARS

John D. Martens, Carrollton, Tex., assignor to Elfab Corp., Lewisville, Tex.

Filed Nov. 1, 1984, Ser. No. 667,292
Int. Cl.[4] H01R *9/09;* **H05K** *1/11*
U.S. Cl. 339—17 LC **8 Claims**



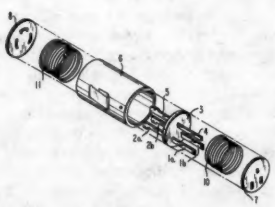
1. A connector for surface mounting and at lease two bus bars mounted on a printed circuit board, the connector including an insulative connector body and having one or more rows of contacts placed along the length of the connector body, and selected ones of the contacts connected to one of said bus bars, characterized by a notched region on each end of the connector body for accommodating the placement of each connector end over a bus bar, and a plurality of the contacts associated with each notched end, said contacts, associated with each notched end of the connector body, having ends suitable for press fitting into holes in the bus bar under the notched ends of the connector body, and the connector body being formed as an integral structure with said notched regions prior to location of the bus bars in the notched regions, all of said contacts in said connector body being located for electrical engagement with corresponding contacts placed along the length of a mating connector.

4,585,286

UNIVERSAL ELECTRICAL PLUG ADAPTER

Darrell Parr, 3195 Heights Dr., Reno, Nev. 89503

Filed Aug. 5, 1985, Ser. No. 762,419
Int. Cl.[4] H01R *29/00*
U.S. Cl. 339—31 M **1 Claim**



1. An electrical plug adapter for adapting a male three-prong electrical household plug to a three-prong male OSHA twist-lock plug, and vice versa, comprising a set of two male power prongs and a ground prong arranged in accordance with the pattern used for household appliances, and a set of two male

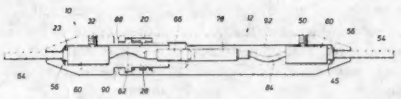
power prongs and a ground prong arranged in accordance with the pattern used for OSHA twistlock connectors, the power prongs on the household plug being electrically connected to the power prongs on the OSHA plug, and the ground prong on the household plug being connected to that on the OSHA plug, the connections between said prongs being embedded in an insulating block, the assembly of prongs and insulating block being disposed in a hollow cylindrical housing made of a nonconducting material, being free to slide back and forth therein, said assembly being restrained from rotation within said housing by alignment clips fastened to a first end plate, said alignment clips grasping the prongs of the household plug, said first end plate being secured to the end of the hollow cylindrical housing, and a second end plate, being secured to the opposite end of the housing, there being openings in the first end plate corresponding to the pattern used for three-prong electrical plugs for household appliances, and openings in the second end plate correspondent to the pattern used for three-prong OSHA connectors, and a coil spring in the space between the insulating block and the first end plate, and a second coil spring in the space between the insulating block and the second end plate, whereby the movement of the prong assembly within the housing is restrained.

4,585,287

CABLE CONNECTOR FOR USE IN DOWNHOLE DRILLING AND LOGGING OPERATIONS

Mark S. Ramsey, Spring, and James F. Miller, Houston, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Apr. 2, 1984, Ser. No. 595,892
Int. Cl.[4] H01R *11/00*
U.S. Cl. 339—60 C **19 Claims**



1. A cable connector for connecting ends of first and second cables each having an inner flexible conductor and an outer covering which provides tensile strength to said cables, said cable connector comprising:

(a) a first housing having a male portion and a first through passageway forming a first aperture for receiving said first cable;

(b) a second housing having a female portion for receiving said male portion and having a second through passageway forming a second aperture for receiving said second cable;

(c) attachment means for interconnecting said first and second housings;

(d) biasing means for preventing inadvertent disengagement of said first and said second housings;

(e) said first and second passageways defining an elongate conductor connection chamber having a central longitudinal chamber axis;

(f) contact means positioned within said connection chamber for connecting said inner flexible conductors of said first and second cables;

(g) an elastomeric boot encompassing said contact means for sealing said conductor connection from the environment within said connection chamber; and

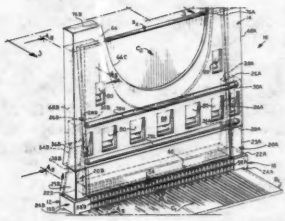
(h) first and second securing means each connected to said first and said second cables, respectively, for engaging said first and second housings, respectively, and preventing tensile forces imposed on said cables from being transmitted to said inner flexible conductors positioned within said connection chamber, whereby said first and second securing means are both radially movable within said connection chamber.

4,585,288

RECTILINEARALLY LATCHABLE ZERO INSERTION FORCE CONNECTOR

Paul W. Aikens, Etters, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 14, 1983, Ser. No. 561,298
Int. Cl.[4] H01R *9/09*
U.S. Cl. 339—75 MP **10 Claims**



1. A zero insertion force connector for electrically engaging a conduction path disposed on a substrate comprising:

a dielectric housing having an abutment surface thereon, the housing being adapted to receive a substrate introduced edgewise thereinto and to support the same in an initial position in which the substrate is inclined slightly with respect to the abutment surface;

an electrically conductive contact mounted within the housing;

a latch rectilinearly vertical displaceable with respect to the housing from an open to a latched position, the latch displacement direction and substrate introduction direction being substantially the same, displacement of the latch to the latched position imposing a displacing force on the substrate to move the same with respect to the housing from the initial to a final position in which the substrate abuts the abutment surface;

displacement of the latch progressively moving the substrate into engagement with the contact to cause the same sequentially to pivot with respect to the housing and to move across the conduction path in a wiping direction and thereafter to slide with respect to the housing and to move across the conduction path in a backwiping direction to present a portion of the contact in contacting relationship with a freshly wiped portion of the conduction path.

4,585,289

COAXIAL CABLE CORE EXTENSION

Jean L. Bocher, Ermont, France, assignor to Societe Anonyme Dite: Les Cables de Lyon, Clichy, France

Filed May 4, 1984, Ser. No. 607,045
Claims priority, application France, May 4, 1983, 83 07408
Int. Cl.[4] H01R *17/04*
U.S. Cl. 339—89 C **4 Claims**

1. Extension (1) of a coaxial cable (20) core (21), said core constituting a tube, said extension comprising:

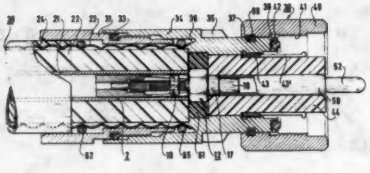
a cylindrical socket (2) with a tapered end (4) of an outer diameter larger than the inner diameter of the tube (21) and made flexible by longitudinal slots (6),

a polygonal nut (10) having angled corners (11) introduced in said longitudinal slots (6) of socket (92),

a traction screw (12) screwed into the nut and including a pick-up end (16),

said traction screw being stopped against the tube (21), after

previous introduction of the nut (10) in socket (2), then socket (2) in tube (21), pulling the nut longitudinally to



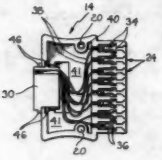
push apart and tighten the flexible tapered end onto inside wall (21') of tube (21).

4,585,290

MODULAR TEST PLUG ADAPTER

Robert H. Knickerbocker, Cheshire, and Stephen M. Thomas, Torrington, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Filed Jul. 26, 1984, Ser. No. 634,816
Int. Cl.[4] H01R *27/00*
U.S. Cl. 339—97 R **14 Claims**



1. A modular test adapter which is adapted to electrically and mechanically connect onto a plurality of terminals extending from a telephone terminal block, comprising:

an electrically insulating housing, said housing having a base portion and a nose portion, said nose portion having a width dimension which is less than the width dimension of said base portion, said nose portion having a plurality of apertures extending in a line which is substantially perpendicular to said nose portion width dimension, said apertures connecting the outside of said housing with the inside of said housing, each of said apertures leading to a cavity;

female bridge clip means, said clip means being disposed, one in each of said cavities, said bridge clip means being adapted to surroundingly receive a terminal from the terminal block and effect electrical and mechanical connection therewith;

modular jack means, said modular jack means being retained within an opening in said base portion of said housing, said modular jack means having contact pins therein, that portion of the modular jack means that is within the adapter being within the wider width dimension region of the base portion; and

conductor means electrically and mechanically connected between said bridge clip means and said modular jack contact pins.

4,585,291

DUAL-IN-LINE CONNECTOR ASSEMBLY

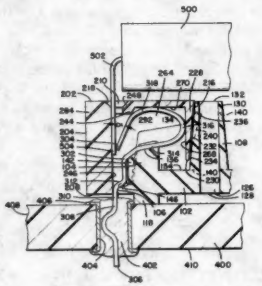
Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Sep. 14, 1983, Ser. No. 531,885
Int. Cl.[4] H01R *13/506*
U.S. Cl. 339—117 R **23 Claims**

1. An improved dual-in-line connector assembly of the closed-entry, closed-bottom type having socket areas defined therein which are accessible from the assembly exterior and having contacts, each contact including an exposed pin portion extending through pin openings in the housing and a spring portion housed in a socket area of the housing, comprising:

a drainage system including a plurality of drainage paths leading from the socket areas to orifices in the assembly exterior which are separated from the locations of pin openings in the housing,

wherein a first configuration drainage path of the plurality is defined by a drainage chute associated with the floor of at



least one socket area and a drainage opening abreast of the drainage chut which is in communication with the assembly exterior,

each of the drainage openings communicating with a single elongated cavity which communicates with the assembly exterior, the drainage openings and the elongated cavity being formed by an extended oval-shaped projection of the base and wherein the body includes a centered portion defining an oval-shaped hollow which is configured to conform to the projection and to receive the latter when the base and body are assembled together.

4,585,292

OVERMOLDED SHIELDED CONNECTOR

Robert H. Frantz, Newville; Mark H. Waters, Harrisburg, and Charles E. Reynolds, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 607,073, May 4, 1984. This application Dec. 14, 1984, Ser. No. 682,045
Int. Cl.[4] H01R *13/46*
U.S. Cl. 339—143 R **7 Claims**

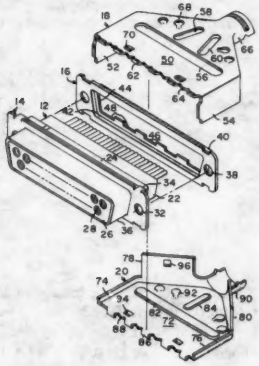
1. A shielded electrical connector comprising

an insulative housing having a front mating face, a rear conductor receiving face, and a plurality of terminals mounted therein,

metal shell means mounted on the periphery of said housing between said faces, said shell means having an aperture therethrough,

a pair of stamped and formed metal shields enclosing the rear conductor receiving face of the housing and a cavity extending rearward therefrom, said shields each having hooked tines which engage said shell means proximate said aperture as said shields are rotated about said tines and into engagement to form said cavity, at least one of said shields having protuberance means thereon which engages said shell means in interference so as to oppose rotation of said shields, by resilient engagement between

said protuberance means and said shell means, thereby forming a stored energy preload condition assuring electrical continuity between said shell means and said shields when said shields are engaged.



4,585,293

ELASTIC PRESS-IN FOR THE SOLDERLESS CONNECTION OF THE WINDING POSTS OF ELECTRIC CONNECTORS OR THE LIKE WITH THROUGH-CONNECTED PRINTED WIRING BOARDS

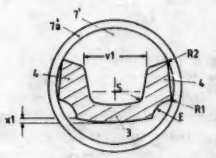
Franz Czeschka, Rechberghausen; Egon Reichenecker, Adelberg, and Reinhard Zorn, Rechberghausen, all of Fed. Rep. of Germany, assignors to ERNI Elektroapparate GmbH, Adelberg, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,239

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1982, 3241061

Int. Cl.⁴ H01R *4/24*

U.S. Cl. 339—221 R **3 Claims**



1. An elastic plug connector for solder-free connection in a printed circuit board comprising an axially extending pin for insertion into a through-opening in the printed circuit board, said pin having a regularly shaped transverse cross-section with a part of said pin having an axially extending deformed elastic section extending transversely outwardly from said regular shaped section and arranged to effect contact with the surface within the opening in the printed circuit board, said deformed elastic section being U-shaped transverse to the axial direction of said pin and said U-shaped section comprising a base with a pair of opposite laterally spaced axially extending sides, and an axially extending leg extending outwardly from each of said opposite sides and disposed transversely of said base, said base having a generally planar outside surface, said legs disposed generally parallel to one another and being elastically displaceable relative to said base, a transition section interconnecting each said leg and said base, said transition sections have a wall thickness at least equal to the wall thickness of said base, said U-shaped section having an inside surface formed by said base, said transition sections, and said legs, and the inside surface of said transition sections extend obliquely outwardly from said base to said legs and the outside surface of said transition sections being a concavely shaped arcuate surface between said base and said legs, each said leg having a generally planar outside surface extending transversely of said base from said transition sections interconnecting said base and leg and defining oppositely facing outside surfaces of said legs, each said planar outside surface having a pair of opposite ends spaced apart in the direction of said legs extending from said base with one of said opposite ends being located at the connection of said transition section to said leg and the other said opposite end being located at the free end of said leg and said opposite end outside surfaces being rounded, said legs have a thickness extending transversely of the axial direction of said pin greater than the corresponding thickness of said transition sections, and said U-shaped section having a center of gravity with the center of gravity being spaced from said base and between said legs whereby when said pin is inserted into an opening in the printed circuit board, said U-snaped section deforms with the only contact between said pin and the opening being provided by the opposite ends of said planar outside surfaces of said legs.

4,585,294

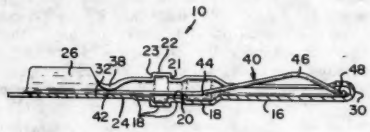
ACTIVE PIN CONTACT

James P. Wolowicz, Harrisburg, and Howard R. Shaffer, Millersburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 333,231, Dec. 21, 1981, Pat. No. 4,422,711. This application Dec. 19, 1983, Ser. No. 562,752

Int. Cl.⁴ H01R *11/22*

U.S. Cl. 339—252 R **14 Claims**



1. An active electrical pin contact comprising a hollow contact and a spring member secured in said hollow contact, characterized in that:

said hollow contact includes a pin contact section, a conductor-connecting section for electrical connection with an electrical conductor, a spring-engagement section forward from said conductor-connecting section and a relief section intermediate said pin contact section and said spring-engagement section, said hollow contact being formed with a rounded nose portion in said pin contact section;

said spring member has a rear section, a bowed section, a short front section, and a long flexing section intermediate said rear section and said bowed section which has a curved configuration reverse to that of said bowed section;

said spring member is inserted into said hollow contact and secured therein with said rear section extending along an inside surface of said spring-engagement section of said hollow contact, said bowed section having a contact-engaging section extending through a longitudinal gap in said pin contact section and above an outside surface thereof, said short front section extending along an inside surface of said nose portion, and said long flexing section disposed along said relief section of said hollow contact proximate an inside surface of said relief section; and

one of said long flexing section and said relief section is adapted to provide radial spacing between said long flexing section and said inner surface of said relief section when said spring member is unstressed, whereby said long

flexing section is flexible toward said inner surface when an inward force is exerted onto said contact-engaging section of said spring member.

4,585,295

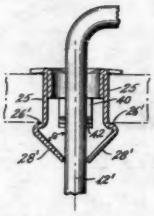
CIRCUIT BOARD EYELET-TYPE WIRE GRIPPER

Daniel W. Ackerman, Chenango Bridge, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Continuation-in-part of Ser. No. 428,872, Sep. 30, 1982, abandoned. This application May 21, 1984, Ser. No. 612,547

Int. Cl.[4] H01R *13/11*

U.S. Cl. 339—258 R **5 Claims**



1. An eyelet formed from relatively thin sheet metal stock, insertable into the hole of a circuit board so as to receive the lead of a component to be soldered into place on the circuit board and having a central axis, said hole communicating a top and a bottom of said circuit board, said eyelet comprising:

means for attaching said eyelet to said circuit board by a snap-fit upon insertion of said eyelet into said hole, said attaching means comprising a head portion having an aperture and surrounding edge, and a lip portion extending into said board from said edge to provide a generally tubular reinforcing collar of said eyelet, said aperture generally centered on said central axis, and support tabs extending radially outwardly from said edge so as to engage said top and limit a depth of insertion of said eyelet into said hole, and legs depending from said head portion and insertable into said hole, each of said legs having a keeper portion engageable with said bottom by a snap-fit; and

primary and secondary means for gripping a lead inserted into said eyelet to provide at least mechanical connection of said lead to said conductive portion, said secondary gripping means comprising at least two said legs having said keeper portions.

4,585,296

SCANNING OPTICAL SYSTEM HAVING A TILTING CORRECTING FUNCTION

Kazuo Minoura, and Kazuhiko Matsuoka, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 351,533, Feb. 23, 1982, abandoned. This application Apr. 18, 1984, Ser. No. 601,548

Claims priority, application Japan, Mar. 3, 1981, 56-30347; Mar. 3, 1981, 56-30353

Int. Cl.[4] G02B *27/17, 3/06*

U.S. Cl. 350—6.5 **10 Claims**

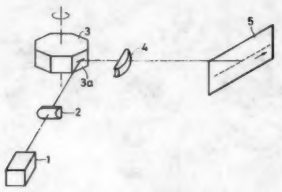
1. A compact scanning optical system for scanning a surface, said system comprising:

means for supplying a scanning light beam;

deflecting means having a deflecting and reflecting surface for deflecting the light beam from said supply means in a predetermined direction toward the surface to be scanned;

first optical means for linearly forming the light beam from said supply means near said deflecting and reflecting surface of said deflecting means; and

a single toric lens disposed between said deflecting means and the surface to be scanned, said single toric lens having a power both in the deflection plane of the light beam as deflected by said deflecting means and in a plane orthogonal to said deflection plane and having different powers in orthogonal planes, said single toric lens further having a meniscus shape with its concave surface, in a cross section containing the optical axis and perpendicular to the deflection plane, facing said deflecting means, said meniscus shape further comprising a surface having a positive refractive power, the light beam deflected by said deflecting means being imaged by said single toric lens on the surface to be scanned.



4,585,297

LIGHT DEFLECTOR

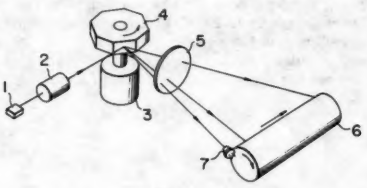
Iwao Hamaguchi, Kanagawa, and Isamu Shibata, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 7, 1983, Ser. No. 511,677

Claims priority, application Japan, Jul. 8, 1982, 57-118785

Int. Cl.[4] G02B *26/08*

U.S. Cl. 350—6.8 **5 Claims**



1. A light deflector comprising a motor having a drive shaft and a light reflecting member coupled to said drive shaft and having a plurality of light reflecting surfaces for successively reflecting an incident light beam in response to rotation of said drive shaft, said motor being subjected to generated magnetic field ripples per revolution the number of which is arranged to be equal to a multiple by an integer of the number of said light reflecting surfaces.

4,585,298

PHOTORADIATOR FOR RADIATING LIGHT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Aug. 8, 1983, Ser. No. 521,191

Claims priority, application Japan, Aug. 26, 1982, 57-148314; Sep. 3, 1982, 57-154448

Int. Cl.[4] G02B *6/00*; F21V *7/04*

U.S. Cl. 350—96.10 **23 Claims**

16. Photoradiator comprising:

an elongate light conducting member for conducting converged light from one end to the other end thereof;

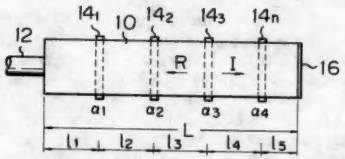
radiating means for radiating the light therethrough to the ambience radially outwardly of the light conducting member, said radiating means comprising a plurality of radiating means positioned at spaced locations on the light conducting member; and

reflecting means for reflecting light incident thereon, said

reflecting means being positioned at said other end of the light conducting member with a reflecting surface thereof faced inwardly of the light conducting member;

said radiating means being constructed to set up a selective quantity distribution of the radiated light at least along an axis of the light conducting member;

said radiating means being constructed such that the total quantity of light s_i radiated through each of the radiating



means after being introduced into the light conducting member and light s_i' radiated through said radiating means after being reflected by the reflecting means, s_i+s_i', has a specific value relative to the other radiating means, in which a selected amount of light S_i to be radiated from the radiating means satisfies the equation:

$$S_i=(1+B_i)S$$

where

$$\bar{S}=\frac{1}{n}\sum_{i=1}^{n}(s_i+s'_i),$$

n is the number of the radiating means, B_i is a preselected value, and

$$\sum_{i=1}^{n}(1+B_i)=1.$$

4,585,299

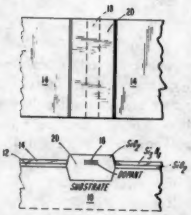
PROCESS FOR FABRICATING OPTICAL WAVE-GUIDING COMPONENTS AND COMPONENTS MADE BY THE PROCESS

Robert J. Strain, San Jose, Calif., assignor to Fairchild Semiconductor Corporation, Cupertino, Calif.

Filed Jul. 19, 1983, Ser. No. 515,112

Int. Cl.⁴ G02B *6/10;* **H01L** *21/22, 31/00;* **B44C** *1/22*

U.S. Cl. 350—96.12 **23 Claims**



16. An optical wave-guiding component comprising a silicon substrate, and an oxidized region of the substrate surrounding an interior region of a higher index of refraction than said oxidized region, said interior region containing selectively implanted ions of a dopant defining an optical wave-guiding region and said oxidized region defining a light confining region surrounding said interior, guiding region.

4,585,300

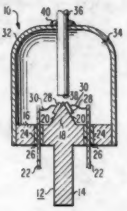
MULTI-EMITTER OPTICAL FIBER DEVICE

William C. Landis, Lancaster, and Frank S. Pudlo, Leola, both of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 27, 1983, Ser. No. 489,223

Int. Cl.⁴ G02B *7/26*

U.S. Cl. 350—96.20 **5 Claims**



1. A multi-emitter semiconductor electroluminescent device, comprising:

an optical fiber;

a housing having one end of said optical fiber therein, and including a mounting block having a plurality of sides angled toward a common point in which the optimum angle of each of said sides with respect to the longitudinal axis of said optical fiber is no greater than ½ the acceptance angle of said optical fiber; and

a plurality of semiconductor electroluminescent elements mounted in the housing, with a separate element being mounted on each of said sides such that the light emitted therefrom is directed into the end of the fiber, within the housing.

4,585,301

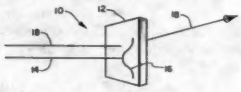
OPTICALLY ACTUATED OPTICAL SWITCH APPARATUS AND METHODS

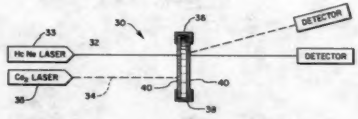
Stephen E. Bialkowski, Smithfield, Utah, assignor to Utah State Universtiy Foundation, Logan, Utah

Filed Apr. 23, 1985, Ser. No. 726,087

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.20 **36 Claims**





1. An optically actuated optical switch comprising:

means for providing a first optical beam directed into a switching medium, the switching medium being substantially transparent to the first optical beam;

means for selectively providing a second optical beam, said second optical beam being directed into the switching medium and being at least partially interactive with the switching medium, whereby a refractive index gradient is produced by the second optical beam within the switching medium such that the path of the first optical beam varies in response to the intensity of the second optical beam as the first optical beam passes through the switching medium.

4,585,302

GUIDE SLEEVE FOR LIGHT WAVEGUIDE PLUG DEVICES UTILIZING A SLIDING SLEEVE FOR WIPING PIN SHAPED BODIES

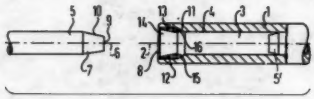
Josef Schoen, Geretsried, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1983, Ser. No. 526,373

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1982, 8225781

Int. Cl.[4] G02B *6/36*

U.S. Cl. 350—96.20 **4 Claims**



1. In a guide sleeve for receiving at least one pin-shaped body having a light waveguide end section secured in said body concentric with an axis of said body to form a light waveguide plug connection, said guide sleeve having a cylindrical bore extending coaxially on an axis of the sleeve to at least one end of the sleeve to form an acceptance opening for receiving the pin-shaped body, said cylindrical bore forming a first portion having an inner surface matched to a cylindrical surface of the pin-shaped body to enable forming a play-free fit therebetween and at an end of the guide sleeve a second portion coaxial to the first portion and of a larger diameter, the improvements comprising a sliding sleeve of a synthetic plastic material being disposed in said second portion of the bore with a first end adjacent the first portion of the bore, said sliding sleeve being a tubular sleeve with a tapering inside diameter decreasing toward said first end and having a limiting wall at said first end, said limiting wall coacting with the inside surface of said sliding sleeve to form a wedge-shaped edge, said edge elastically conforming to said cylindrical outer surface of said pin-shaped body so that during insertion of the pin-shaped body into the acceptance opening, said edge of said sliding sleeve wipes the outer surface of said pin-shaped body.

4,585,303

OPTICAL CABLE HEADER

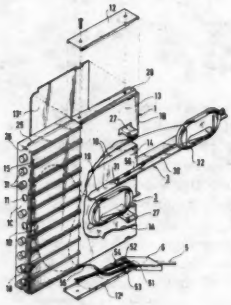
Jean-Jacques Pinsard, Vigneux sur Seine, and Jacques Roger, Morsang sur Orge, both of France, assignors to Compagnie Industrielle des Telecommunication CIT-Alcatel, Paris, France

Filed Aug. 4, 1983, Ser. No. 520,282

Claims priority, application France, Aug. 4, 1982, 82 13627

Int. Cl.[4] G02B *6/36*

U.S. Cl. 350—96.20 **15 Claims**



1. An optical cable header for providing optical connections to individual fibers of an optical cable by bringing connection end fittings mounted on the individual cable fibers with other connection end fittings on external optical fibers, the improvement wherein said header comprises:

a plurality of optical connector supports, each support having an elongate body in the form of a hollow finger having opposite ends,

an optical connector member fixedly mounted to each hollow finger at one end and being coupled to a connection end fitting,

a coil former on one side of each hollow finger adjacent the other of said opposite finger ends, for receiving the single fiber of said cable, said cable fiber terminating at said connection end fitting inside said finger; and

a magazine having laterally opposed sidewalls and opposite front and rear faces at opposite ends thereof, said magazine further comprising a plurality of individual cavities extending parallel to each other from said front face to said rear face and opening to said front and rear faces at respective opposite ends, said cavities receiving, respectively, said optical connector supports with said connector members constituting optical accesses to the individual fibers of said cable, and said accesses being at said front face of said magazine.

4,585,304

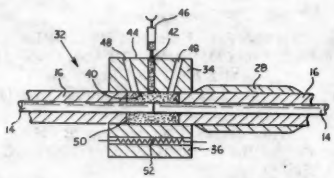
TECHNIQUE FOR REPAIRING AND JOINING SMALL DIAMETER OPTICAL FIBER CABLES

Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, both of Conn., assignors to Virginia, New Haven, Conn.

Filed Sep. 6, 1983, Ser. No. 529,297

Int. Cl.[4] G02B *6/38*

U.S. Cl. 350—96.21 **20 Claims**



1. A method for repairing or joining together optical fiber cables, said method comprising:

providing at least two spaced-apart optical fiber cables, each said cable comprising a length of metal tube housing an optical fiber having an end extending beyond said tube;

sliding a hollow, substantially cylindrical metal ferrule having an inner diameter adapted to fit about the outer surface of each said tube over a first one of said tubes;

splicing said optical fiber ends together;

forming a substantially cylindrical area having an inner diameter substantially equal to the outer diameter of said tubes about said spliced ends;

inserting a buffer material into said substantially cylindrical area; and

moving said ferrule over said buffer material and into overlapping relationship with each said metal tube,

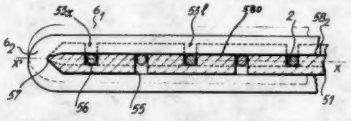
whereby said ferrule spans the gap between said spaced-apart tubes and said buffer material surrounds said spliced optical fiber ends.

4,585,305

DEVICE FOR ARRAYING THE ENDS OF OPTICAL FIBERS DISPOSED AROUND AN AXIALLY SYMMETRICAL STRUCTURE

Elie C. Chazelas, 11, rue de Verdun St. Germain Laval, 77130 Montereau; Philippe R. P. Cheron, 1, route de Flagy, St Ange le Vieil, 77110 Lorrez le Bocage, and Charles L. Martin, 9, rue des Butes Veneux Les Sablons, 77250 Moret S/Loing, all of France

Filed Jan. 11, 1983, Ser. No. 457,273
Claims priority, application France, Jan. 27, 1982, 82 01253
Int. Cl.[4] G02B *6/38, 6/44*
U.S. Cl. 350—96.21 20 Claims



1. A device for arraying the ends of optical fibers disposed around an axially symmetrical structure, said device comprising an elongated member having substantially longitudinal exposed grooves extending between opposite first and second ends of said member, each of said grooves being designed to receive a single optical fiber, the grooves being spaced about said first end of said member in a similar fashion to the way the optical fibers are disposed around said axially symmetrical structure, the grooves being aligned along an axis transverse with said second end of said member, said second end having two plane major faces, at least one of said faces including said grooves.

4,585,306

OPTICAL MATERIALS

Akira Ohmori, Ibaraki; Nobuyuki Tomihashi, Takatsuki, and Kiyohiko Ihara, Suita, all of Japan, assignors to Daikin Kogyo Co. Ltd., Japan

Continuation of Ser. No. 476,482, Mar. 18, 1983, abandoned.
This application Oct. 31, 1984, Ser. No. 667,056
Claims priority, application Japan, Mar. 25, 1982, 57-48498
Int. Cl.[4] C08F *210/02;* G02B *5/14*
U.S. Cl. 350—96.34 2 Claims

1. In an optical fiber comprising a cladding and a core, the improvment wherein said cladding comprises a copolymer consisting essentially of

(1) 30 to 60 mol % of ethylene,

(2) 20 to 70 mol % of at least one member selected from the group consisting of tetrafluoroethylene and chlorotrifluoroethylene, and

(3) 1 to 30 mol % of olefin having at least one fluoroalkyl group represented by the formula

$$X^1(CF_2)_n(CH_2)_m(O)_pCX^2{=}CX^3X^4$$

wherein X^1 represents hydrogen, fluorine or

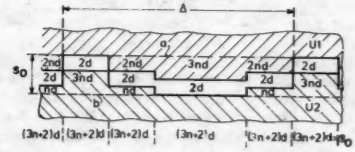
X^2 represents hydrogen, fluorine or trifluoromethyl; X^3 and X^4 are the same or different and represent hydrogen or fluorine; n is an integer of 1 to 6; m is 0 or 1; and p is 0 or 1.

4,585,307

COMPOUND OPTICAL PHASE GRATING AND SWITCHING DEVICES COMPRISING SUCH A GRATING

Hans Dammann, Eichenstrasse 27, 2081 Tangstedt, and Heinrich Kurz, Haidkamp 2, 2080 Pinneberg, both of Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,775
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1983, 3303623
Int. Cl.[4] G02B *5/18*
U.S. Cl. 350—162.22 15 Claims



1. A compound optical phase grating comprising:

a substantially planar first grating section having parallel grooves, having a grating period, and having a grating profile which is repeated once each grating period; and

a substantially planar second grating section having parallel grooves, having a grating period equal to the grating period of the first grating section, and having a grating profile which is repeated once each grating period, said second grating section being arranged opposite and parallel to the first grating section with the grooves in the first grating section parallel to the grooves in the second grating section, the first and second grating sections being movable relative to each other in their planes in a direction perpendicular to the grooves;

characterized in that:

each grating profile is at least substantially parabolic;

each grating profile is symmetrical about the center of each grating period; and

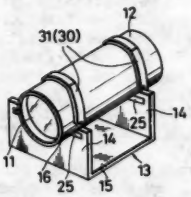
when the first and second grating sections are both arranged symmetrically about a common line perpendicular to the grating, the compound grating has an optical path length therethrough which is uniform across the grating.

4,585,308

LENS FRAME HOLDING DEVICE

Ikuo Negoro, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1984, Ser. No. 641,907
Claims priority, application Japan, Sep. 7, 1983, 58-164358
Int. Cl.[4] G02B *27/02;* G03B *25/52*
U.S. Cl. 350—252 7 Claims



1. In a lens frame holding device in which a housing has a bottom wall and two vertical walls at both ends of said bottom wall, supporting cuts for supporting a lens frame being formed in said vertical walls opening upwardly, and said lens frame is fixedly secured to said housing by tightening lens holding members, the improvement wherein:

for each lens holding member, two hooking slots are formed in each vertical wall of said housing,

each lens holding member is an elastic member having two hooking portions adapted to engage with said two hooking slots, and

with said lens holding members which are laid over said lens frame set in said supporting cuts formed in said vertical walls, wherein said frame is fixedly secured to said housing by said hooking portion and said hooking slots.

4,585,309

RUN-FREE COLOR RASTER FOR MULTI-COLOR PRINTING

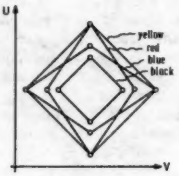
Eggert Jung, Schoenberg, and Heinrich Wadle, Neumuenster, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 559,704, Dec. 9, 1983, abandoned, which is a division of Ser. No. 341,486, Jan. 21, 1982, Pat. No. 4,443,060. This application Mar. 21, 1985, Ser. No. 714,066

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 81100520[U]

Int. Cl.[4] G02B *5/22*; G03F *5/00*

U.S. Cl. 350—322 **2 Claims**



1. A rastering method for the production of printing forms for the reproduction of more than two multi-colored images, for example for engraving rotogravure cylinders comprising the steps of individually generating raster points in succession by a recording element moving along a rotating cylinder by means of an axial feed-motion and that functions with a constant screening frequency, and setting the rotational speed of the cylinder and the axial feed of the recording element such that the feedline spacings of the recording in the various rasters of a set of color separations as well as the raster points spacings in the circumferential direction of the cylinder within the feedlines of said set of color separations respectively have ratios which are exactly small rational numbers and that the number of raster points per surface unit is different in the individual color separations of the set.

4,585,310

ALIGNMENT LAYER ORIENTATION IN RASTER SCAN THERMALLY ADDRESSED SMECTIC LIQUID CRYSTAL DISPLAYS

Nicholas J. Clecak, San Jose; Robert J. Cox, Watsonville; Joseph S. Feng, San Jose, and Jerry Leff, Saratoga, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

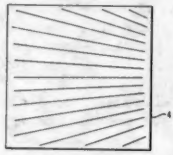
Filed Dec. 12, 1983, Ser. No. 560,475

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—341 **4 Claims**

1. A reflective liqud crystal cell addressed by a scanning laser and having a first and second substrate being separated by a spacing member to form a cavity, said cell comprising

an inplane alignment layer on said first substrate, said alignment layer being oriented in a direction taken from the group consisting of perpendicular, parallel and antiparallel to the scanning direction of the laser wherein the orientation direction of the alignment layer determines the characteristics of the written image, and wherein said cell includes a liquid crystal material in said cavity, said material comprising 4-octyloxy-4′-cyanobiphenyl, 37.5%±0.5 weight percent, 4 decyl-4′-cyanobiphenyl 36.8±0.5



weight percent and 4-undecyl-4′-cyanobiphenyl 25.7±0.5 weight percent.

4,585,311

LIQUID CRYSTAL DEVICE HAVING INTERDIGITATED ELECTRODES

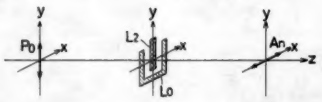
Takao Kawamura, and Akihiko Sugimura, both of Sakai, Japan, assignors to Kyocera Corporation, Japan

Filed Jan. 6, 1983, Ser. No. 455,932

Claims priority, application Japan, Jan. 25, 1982, 57-10356; Jun. 17, 1982, 57-105088; Aug. 12, 1982, 57-141550

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—347 V **8 Claims**



1. A liquid crystal device comprising:

two substantially parallel polarizers, each having an axis of polarization, wherein the axis of polarization of each polarizer is disposed perpendicularly to the axis of polarization of the other polarizer;

first and second transparent planar substrates disposed between the polarizers, each substrate having an inner surface, wherein both substrates are positioned parallel to the polarizers and wherein the inner surface of the first transparent substrate opposes in close proximity the inner surface of the second transparent substrate;

a substantially planar first electrode positioned flat against the inner surface of the first substrate;

a substantially planar second electrode having at least two pectinations and positioned flat against the inner surface of the second substrate, wherein the pectinations are disposed parallel to the polarization axis of either one of the two polarizers;

a substantially planar third electrode having at least one pectination and positioned flat against the inner surface of the second substrate, wherein at least one pectination of this electrode is disposed between the pectinations of the second electrode, and wherein the pectinations of the third electrode have a width the same as that of one dot forming an ON and OFF condition of the transmission light; and

liquid crystal charged between the transparent substrates.

3. A liquid crystal device comprising:

two substantially parallel polarizers, each having an axis of polarization, wherein the axis of polarization of each polarizer is disposed perpendicularly to the axis of polarization of the other polarizer;

a first and a second transparent planar substrates disposed between the polarizers, each substrate having an inner surface, wherein both substrates are positioned parallel to the polarizers and wherein the inner surface of the first

transparent substrate opposes in close proximity the inner surface of the second transparent substrate;

a substantially planar first electrode positioned flat against the inner surface of the first substrate;

a substantially planar second electrode having at least two pectinations and positioned flat against the inner surface of the second substrate, wherein the pectinations are disposed parallel to the polarization axis of either one of the two polarizers;

a substantially planar third electrode having at least one pectination and positioned flat against the inner surface of the second substrate, wherein at least one pectination of this electrode is disposed between the pectinations of the second electrode; and

liquid crystal charged between the transparent substrates.

4,585,312

ELECTROCHROMIC ELEMENT

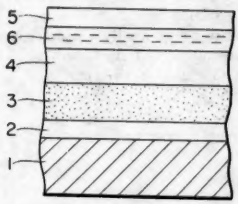
Kazuya Ishiwata, Yokosuka, and Shigeharu Iijima, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1983, Ser. No. 543,449

Claims priority, application Japan, Oct. 29, 1982, 57-190626

Int. Cl.⁴ G02F *1/01*

U.S. Cl. 350—357 **6 Claims**



1. A full solid type electrochromic element comprising, a laminate, in sequence, of a substrate, a first electrode of an electrically conductive film, a first electrochromic layer as a color forming layer at the cathode side, an insulation layer of a dielectric film, and a second electrode of an electrically conductive film, characterized in that a second electrochromic layer of cobalt hydroxide ($Co(OH)_2$), as the color forming layer at the anode side, is interposed between said insulation layer and said second electrode and wherein said second electrochromic layer is formed by evaporative depositon of cobalt (Co) as an evaporative material in the presence of water vapor.

4,585,313

LENS DRIVE DEVICE AND OPTICAL LENS ASSEMBLY UTILIZING THE SAME

Hiroshi Iwata; Toshitsugu Kashihara, both of Nara; Youichi Iwai, Moriguchi, and Nobuo Yamashita, Neyagawa, all of Japan, assignors to West Electric Company Ltd., Osaka, Japan

Filed Dec. 13, 1983, Ser. No. 560,993

Claims priority, application Japan, Dec. 14, 1982, 57-219552; Dec. 14, 1982, 57-219555

Int. Cl.⁴ G02B *7/04*

U.S. Cl. 350—429 **13 Claims**

10. An optical lens assembly for use in a photographic or television camera of a type which requires the movement of lenses having a common optical axis, said assembly comprising:

a first lens mount having a first central axis, for the support of a focusing lens with its optical axis parallel to said first central axis;

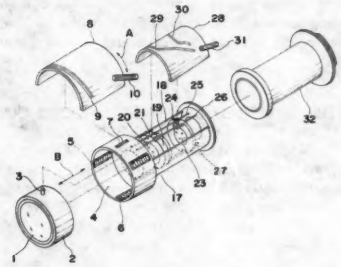
a generally cylindrical barrel accommodating said first lens mount for movement in an axial direction parallel to said first central axis, for focus adjustment, said barrel having a guide slot defined therein so as to extend in a direction parallel to said first central axis;

a first cam member of generally semicircular cross section, mounted over the barrel for rotation about said first central axis, said first cam member having a first cam groove defined therein;

a first pin member secured to said first lens mount so as to extend radially outwardly therefrom, said pin member extending through said guide slot and being drivingly engaged in said first cam groove for directing said first lens mount axially of the barrel when said first cam member is rotated about said first central axis;

a substantially elongated barrel member of generally semicircular cross section and having a compartment of generally semicircular cross section defined therein, said barrel member terminating at opposing edges extending in a barrel direction lengthwise of said barrel member and defining therebetween an opening into said compartment, said barrel member having one end rigidly connected with said cylindrical barrel so as to extend in said barrel direction parallel to said first central axis;

a plurality of slide rods extending in parallel to each other in said barrel direction;



second and third lens mounts having respective second and third central axes aligned with said first central axis, for the support of a variator lens and a compensator lens, respectively, with their optical axis common to the optical axis of said focus lens, said second and third lens mounts being accommodated within said compartment in spaced relation to each other and guided by said slide rods for movement in said barrel direction;

a second cam member of generally semicircular cross section, rotatably mounted on the barrel member for rotation about said second and third central axes, so as to cover said opening, said second cam member having second and third cam grooves defined therein; and

second and third pin members respectively secured to said second and third lens mounts so as to extend radially outwardly Therefrom, said second and third pin members extending through said opening and being drivingly engaged respectively in the second and third cam grooves for directing said second and third lens mounts in said barrel direction for the adjustment of the focal length when said second cam member is rotated about said second and third central axes.

4,585,314

PROJECTION LENS

Masamichi Tateoka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1984, Ser. No. 603,767

Claims priority, application Japan, Apr. 28, 1983, 58-75834

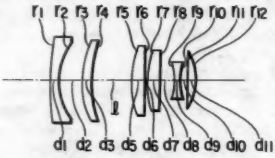
Int. Cl.⁴ G02B *9/62, 13/04*

U.S. Cl. 350—464 **2 Claims**

1. A projection lens having different focal lengths with the

object-image distance kept constant, said projection lens comprising, in succession from the object side:

a first lens group comprising a negative meniscus lens having its convex surface facing the object side and a positive meniscus lens having its convex surface facing the object side, said first lens group as a whole having a negative refractive power, said first lens group being stationary during magnification change; and



a second lens group disposed on the image side of said first lens group and comprising a II-1 positive lens, a II-2 positive lens, a II-3 negative lens and II-4 positive lens disposed in the named order in succession from the object side to the image side, said second lens group as a whole having a positive refractive power, said second lens group being moved during magnification change with the object-image distance kept constant.

4,585,315

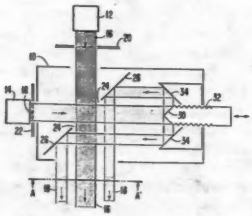
BRIGHTFIELD/DARKFIELD MICROSCOPE ILLUMINATOR

Glenn T. Sincerbox, San Jose; Harald W. Werlich, Los Gatos, and Bwo-Han Yung, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,096

Int. Cl.[4] G02B *21/06, 5/08*

U.S. Cl. 350—525 **7 Claims**



1. A microscope illuminator for object illumination with a first light beam for brightfield illumination and a second light beam for darkfield illumination comprising housing means having openings therein for said light beams,

a first axicon mirror associated with said housing means and positioned to accept said darkfield beam and to reflect each ray of said second beam into a direction perpendicular to the original direction of said beam,

a second axicon mirror having a hole therein and positioned concentrically about said first mirror to reflect the rays from said first mirror into a direction perpendicular to their direction and with said reflected rays being distributed in an annular shape, and

a third miror having a transparent elliptical aperture therein positioned at an angle of 45° to said darkfield beam wherein light from said second beam passes through said aperture to said first mirror and light reflected from said second mirror is reflected by said third mirror to provide darkfield illumination on said object and wherein light from said first beam passes through aperture to provide brightfield illumination on said object.

4,585,316

EXTERIOR REAR VIEW MIRROR HAVING WING-SHAPED SUPPORT ARMS

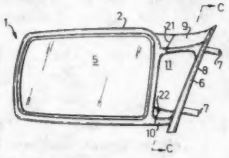
Kjell K. A. Knutson, and Carl U. Dahl, both of Trollhättan, Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Nov. 29, 1983, Ser. No. 556,176

Claims priority, application Sweden, Nov. 29, 1982, 8206798

Int. Cl.[4] G02B *7/18*

U.S. Cl. 350—582 **9 Claims**



1. An external rear view mirror for a vehicle comprising a mirror housing supporting a mirror, first and second supporting arms extending essentially horizontally outward from the housing and connected to a mirror foot, said foot being connected to the vehicle body, the first arm being disposed vertically above the second arm thereby defining a flowthrough hole, the arms having essentially a wing-shaped cross-section such that air flowing through the flowthrough hole is directed downwardly with respect to the vehicle.

4,585,317

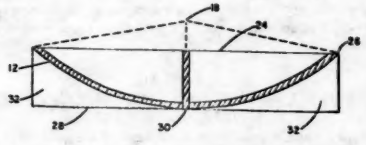
REFLECTOR WITH ATTENUATING CONNECTING PLATES

Marvin P. Hodges, 6162 Leeland St. S., St. Petersburg, Fla. 33715, and Gilbert P. Hodges, St. Petersburg, Fla., assignors to Marvin Hodges, Simi Valley, Calif.

Continuation-in-part of Ser. No. 318,462, Nov. 5, 1981, abandoned. This application Nov. 2, 1982, Ser. No. 438,489

Int. Cl.[4] G02B *5/10*; H01Q *19/12*

U.S. Cl. 350—628 **54 Claims**



1. An antenna including a segmented reflector for receiving radio frequency electromagnetic energy within a defined field of view and for substantially rejecting energy outside the field of view comprising:

at least two curved reflective segments joined together so that said segments have a common focal point, said segments defining a concave surface;

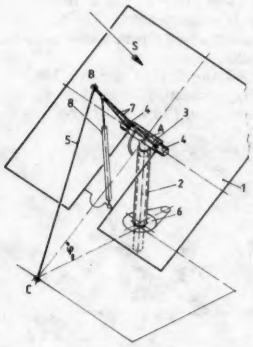
at least one radio frequency reflecting or attenuating connecting plate arranged between and connected to each of said segments, said plate directed toward said common focal point, said plate being disposed on said concave surface of said segments; and

means for receiving radio frequency energy reflected from said surface and not reflected or attenuated by said connecting plate, said receiving means disposed substantially only at said common focal point.

4,585,318
TRACKING DEVICE

Dieter Seifert, Siedlungsstrasse 12, Neuötting, Fed. Rep. of Germany (8265)

Filed Jan. 13, 1984, Ser. No. 570,349
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1983, 3301046; May 7, 1983, 3316731; Jul. 26, 1983, 3326815
Int. Cl.[4] G03B *21/00*; F24J *3/02*
U.S. Cl. 353—3 34 Claims



1. A device for maintaining a first object in alignment with a second object along a curved path around a first axis, said device comprising:

a rotatable shaft having a second axis, said first object being mounted rotatably on said shaft around a third axis, said third axis being perpendicular to said second axis;

drive means for rotating said rotatable shaft around said second axis;

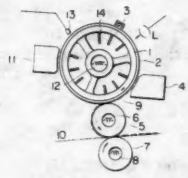
a first hinge connected by at least one limb to said first object;

a second hinge arranged on a fixed relationship to said first axis and intersecting said second axis and said third axis, said second hinge being connected to said first hinge by a directing limb to tilt said first object around said third axis when said drive means rotates said shaft around said second axis.

4,585,319
RECORDING APPARATUS FOR ELECTROSTATIC IMAGES

Yukio Okamoto; Kiyoshi Kimura; Tadashi Miwa; Noriyoshi Tarumi; Masakazu Fukuchi, and Kunio Ito, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1983, Ser. No. 555,453
Claims priority, application Japan, Nov. 29, 1982, 57-210480
Int. Cl.[4] G03G *15/12*
U.S. Cl. 355—3 R 6 Claims

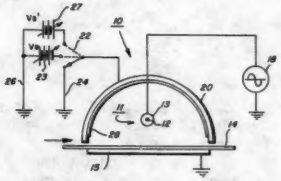


1. A recording apparatus for electrostatic images comprising a photoreceptor, an intermediate transfer means, a means for keeping toner images transferred onto said intermediate transfer means, means for transferring said images again and fixing them onto a transfer material characterized in that there is provided a means for detecting a temperature of said photoreceptor and means for maintaining the temperature of said photoreceptor within a fixed range of T_1 through T_2 said means for maintaining being said intermediate transfer means which is heated and in contact with said photoreceptor when the temperature of said photoreceptor being equal or lower than T_1 and said intermediate transfer means is separated from said photoreceptor when said temperature is higher than T_1.

4,585,320
CORONA GENERATING DEVICE

Robert P. Altavela, Rochester; Raymond E. Bailey, Webster; Joan R. Ewing, Fairport, and Edwin M. Wallin, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 12, 1984, Ser. No. 680,861
The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 CH 13 Claims



1. A corona generating device for depositing a negative charge on an imaging surface carried on a conductive substrate held at a reference potential comprising;

at least one elongated conductive corona discharge electrode supported between insulating end blocks,

means to connect said electrode to a corona generating potential source, at least one element adjacent said corona discharge electrode capable of adsorbing nitrogen oxide species generated when said corona discharge electrode is energized and capable of desorbing nitrogen oxide species when said electrode is not energized, said at least one element being plated with a substantially continuous thin layer of lead to neutralize the nitrogen oxide species when generated.

4,585,321
CORONA DISCHARGING APPARATUS

Kenshi Toshimitsu, Kawasaki; Tetsuya Sukegawa, Yokohama, and Toshimasa Takano, Sagamihara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1985, Ser. No. 696,101
Claims priority, application Japan, Oct. 30, 1984, 59-228520
Int. Cl.[4] G03G *15/02*; H01T *19/00*
U.S. Cl. 355—3 CH 10 Claims

1. A corona discharging apparatus used in an electrophotographic process, comprising:

a conductive case;

an electrode operatively associated with said conductive case and extending in one direction at a predetermined distance from said conductive case, said electrode includ-

ing a linear member having a core and a platinum layer covering the surface of the core; and

power supply means connected to said electrode for applying a voltage between the case and the electrode.

4,585,322

CORONA GENERATING DEVICE

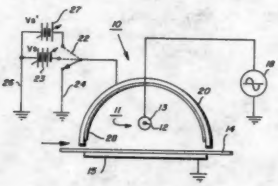
Louis Reale, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 680,879, Dec. 12, 1984. This application Feb. 21, 1985, Ser. No. 703,971

The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclosed.

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 CH **16 Claims**



1. A corona generating device for depositing a negative charge on an imaging surface carried on a conductive substrate held at a reference potential comprising;

at least one elongated conductive corona discharge electrode supported between insulating end blocks,

means to connect said electrode to a corona generating potential source, at least one element adjacent said corona discharge electrode capable of adsorbing nitrogen oxide species generated when said corona discharge electrode is energized and capable of desorbing nitrogen oxide species when said electrode is not energized, said at least one element being coated with a substantially continuous thin dehydrated alkaline film of an alkali metal silicate to neutralize the nitrogen oxide species when generated.

4,585,323

CORONA GENERATING DEVICE

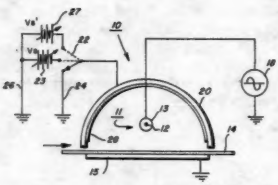
Joan R. Ewing, Fairport, and Edwin M. Wallin, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 12, 1984, Ser. No. 680,867

The portion of the term of this patent subsequent to Apr. 29, 2003, has been disclaimed.

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 CH **14 Claims**



1. A corona generating device for depositing a negative charge on an imaging surface carried on a conductive substrate held at a reference potential comprising; potential comprising:

at least one elongated conductive corona discharge electrode supported between insulating end blocks,

means to connect said electrode to a corona generating potential source, at least one element adjacent said corona discharge electrode capable of adsorbing nitrogen oxide species generated when said corona discharge electrode is energized and capable of desorbing nitrogen oxide species when said electrode is not energized, said at least one element being coated with a substantially continuous thin layer of a paint containing reactive metal particles which will combine with the nitrogen oxides species, said reactive metal being present in said paint in an amount sufficient to neutralize the nitrogen oxide species when generated.

4,585,324

SHELL-TYPE ELECTROSTATIC COPYING APPARATUS

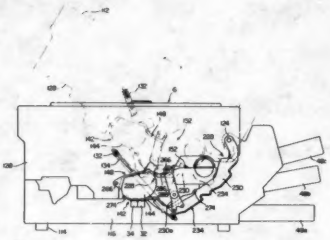
Shigeo Koyama, Ibaraki; Nobuhiko Kozuka, Suita, and Atsushi Kano, Amagasaki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 5, 1984, Ser. No. 596,991

Claims priority, application Japan, Apr. 11, 1983, 58-62125

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **18 Claims**



1. A shell-type electrostatic copying apparatus comprising a supporting structure consisting of a lower supporting frame and an upper supporting frame mounted on the lower supporting frame for free pivotal movement between an open position and a closed position about a pivoting axis extending in the front-rear direction as a center, a rotating drum mounted rotatably on the supporting structure, at least one copying paper feed device mounted on the supporting structure, and a copying paper conveying mechanism for conducting a copying paper delivered from the paper feed device to the rotating drum, said conveying mechanism including a plurality of lower elements and a plurality of upper elements with a copying paper conveying passage being defined between the lower elements and the upper elements; wherein

at least one of the lower elements of the paper conveying mechanism is mounted on the lower supporting frame,

a conveying unit frame is mounted on the supporting structure for free pivotal movement about a pivoting axis extending in the front-rear direction,

a restraining means is provided for releasably restraining the conveying unit frame at a predetermined position with respect to the upper supporting frame, and

at least one of the upper elements of the conveying mechanism is mounted on the conveying unit frame.

4,585,325

FIXING ROLLER DEVICE

Reinhold Euler, Kelkheim, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,006

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1983, 3309398

Int. Cl.[4] G03G *15/20*

U.S. Cl. 355—3 FU **15 Claims**

1. A fixing roller device, comprising:

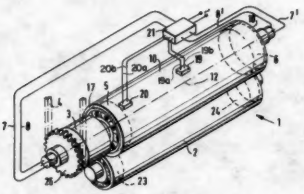
a heating roller having a surface and two ends, said surface having a middle zone, including the axial middle of said surface, and a first and second end zone disposed respec-

tively axially and symmetrically to either side of said middle zone between said middle zone and a respective one of said ends;

first means for sensing temperature of said surface at said axial middle;

second means for sensing temperature of said surface in one of said first and second end zones;

a control system responsively connected to said first and second temperature sensing means; and



means responsively connected to said control system and arranged inside said heating roller, for producing at said heating roller surface a surface temperature distribution which exhibits a first value at said axial middle, symmetrically tends toward a second value at either end of said middle zone, and then substantially uniformly maintaIns said second value substantially throughout said first and second end zones;

wherein said first value is a local maximum.

4,585,326

DEVELOPING ELECTROPHOTOGRAPHIC IMAGE USING MAGNETS AND MAGNETIC MATERIAL

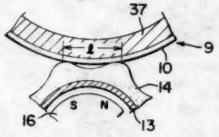
Yukio Okamoto, Hachioji; Kiyoshi Kimura, Iruma; Tadashi Miwa, Hino; Noriyoshi Tarumi; Masakazu Fukuchi, both of Hachioji; Kunio Ito, Tama, and Hiroshi Fuma, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1984, Ser. No. 598,869

Claims priority, application Japan, Apr. 14, 1983, 58-66078

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD **6 Claims**



1. A recording apparatus comprising an image retaining member adapted to retain an electrostatic latent image thereon, and a developer carrier having therein a magnet rotatably arranged and facing said image retaining member for carrying a developer to develop the electrostatic latent image, said magnet having thereon different poles arranged alternately and uniformly around the entire periphery of said developer carrier, and a magnetic material uniformly displaced around the entire periphery of a image retaining member.

4,585,327

SERVICE LIFE DETERMINING SYSTEM FOR IMAGE BEARING MEMBER OF COPYING APPARATUS AND THE LIKE

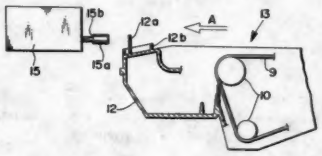
Minoru Suzuki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed May 11, 1984, Ser. No. 609,579

Claims priority, application Japan, May 12, 1983, 58-69833[U]

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R **4 Claims**



1. A service life determining system for determining the service life of an image bearing member or a magazine for containing an image bearing member removably mounted on a main body of a copying apparatus and the like by counting the number of times of use or a period of time of use, comprising:

a counter mounted on the main body of the copying apparatus for counting the number of times or the period of time the image bearing member is used and indicating the result, said counter being resettable;

counter resetting means for resetting the counter; and

an actuator mounted on the image bearing member or the magazine containing the image bearing member for actuating the counter resetting means;

wherein said actuator is operative to actuate said counter resetting means when a new image bearing member is mounted on the main body of the copying apparatus and destroyed when the new image bearing member or the magazine containing the new image bearing member has been set in a predetermined position after the counter resetting means is actuated, whereby the actuator is rendered incapable of actuating the counter resetting means again.

4,585,328

DEVELOPING APPARATUS FOR A PHOTOCOPYING MACHINE

Kurt Moser, Gerlingen, Fed. Rep. of Germany, and Karl Moser, Forch, Switzerland, assignors to Develop Dr. Eisbein GmbH & Co., Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 509,136

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3225006

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD **10 Claims**

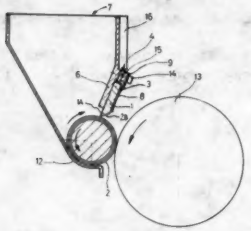
1. Developing apparatus for a photocopying machine or the like comprising:

a reservoir for toner material,

a tubular toner transfer shell disposed at an opening in the reservoir, the outer surface of said shell being configured to transfer toner from the reservoir to a drum upon rotation of the shell,

a doctor blade disposed in facing relationship to the circumference of the shell to control the thickness of the layer of toner on the shell, said doctor blade being guided for radial movement with respect to the shell in a slide way, said slide way being a U-shaped slide way facing the shell

and formed by a radially extending wall of the reservoir and by leaf spring means,



and adjustable adjusting elements disposed at the respective lateral regions of the doctor blade to accommodate adjustment of the position of the doctor blade.

4,585,329

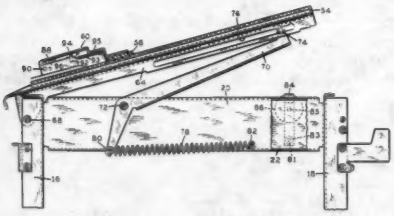
PLATEN COVER ASSEMBLY FOR COPIER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Stamford, Conn.

Division of Ser. No. 268,261, May 29, 1981, Pat. No. 4,435,068. This application Nov. 16, 1983, Ser. No. 552,360

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—3 R **1 Claim**



1. Copying apparatus including in combination, a cabinet adapted to house the operating components of said apparatus, said cabinet having an open top, a lid, means mounting said lid on said cabinet for pivotal movement around a first horizontal axis between a closed position over the open top of said cabinet and an open position at which the interior of said cabinet is accessible, a platen in said lid for supporting a document to be copied, a platen cover, means mounting said cover on said lid for pivotal movement around a second horizontal axis parallel to said first axis between a first position at which said platen is covered and a second position at which said platen is exposed, interengageable elements on said lid and on said cover, said elements being movable between a first relative position out of engagement at which they permit relative movement of said lid and cover and a second relative position in engagement at which they inhibit relative movement of said lid and cover, said elements occupying said first relative position with said lid adjacent to said top, and gravity responsive means for moving said elements to said second relative position as said lid moves away from said top.

4,585,330

UNNECESSARY CHARGE REMOVING DEVICE FROM A LATENT IMAGE BEARING ELEMENT OF ELECTROPHOTOGRAPHIC COPYING MACHINE

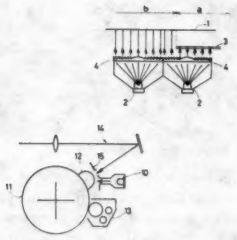
Kazushi Yamamoto, Higashiosaka, and Toyoki Tanaka, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 1, 1983, Ser. No. 556,771

Claims priority, application Japan, Dec. 3, 1982, 57-183761[U]

Int. Cl.[4] G03G *15/04*

U.S. Cl. 355—3 R **6 Claims**



1. A device for removing charges on unnecessary portions of a latent image bearing element surrounding a latent image formed on said element in an electrophotographic copying machine, said device comprising:

light source means for emitting light beams toward said latent image bearing element;

fresnel lens means, responsive to said light beams radiated from said light source means, for changing the light beams emitted from said light source means into parallel light beams; and

light shade means for covering a selected portion of said latent image bearing element bearing said latent image to prevent contact with said parallel light beams,

said parallel light beams developed by said fresnel lens means removing charges from the unnecessary portion of said latent image bearing element surrounding said latent image.

4,585,331

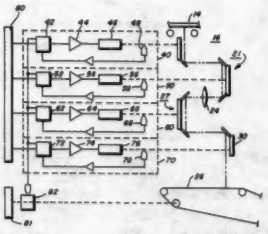
OPTICAL SCANNING SYSTEM UTILIZING LINEAR DRIVE MOTORS

James G. Stoffel, Rochester; William L. Statt, Webster; Jacob N. Kluger, Rochester; Lawrence J. Mason, Penfield, and Richard G. Ermer, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 20, 1984, Ser. No. 642,272

Int. Cl.[4] G03G *15/28, 15/30*

U.S. Cl. 355—8 **5 Claims**



1. In a document reproduction device, an optical imaging system for scanning an original document lying in an object

plane and projecting an image at a selected magnification, onto a photosensitive image plane, the system comprising:

optical means for scanning and illuminating the original document to be copied, said scanning means including at least two moving scan components, each with a separate drive means to provide an independent rate of scan motion, said drive means including a linear electric motor,

projection means for projecting a light image from said document onto said photosensitive image plane, and

digital control means adapted to control the operation of said drive means in selected modes of operation.

4,585,332

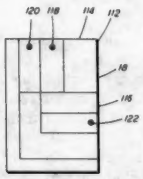
ELECTROPHOTOGRAPHIC PRINTING MACHINE WITH MEANS FOR SENSING SIZE OF DOCUMENT

Vittal U. Shenoy, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 27, 1984, Ser. No. 644,585

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—14 R **13 Claims**



1. An electrophotographic printing machine of the type having a platen for supporting an original document thereon, a photoconductive member arranged to have at least a portion of the surface thereof charged, a variable magnification optical system adapted to expose the charged portion of the photoconductive member to a light image of the original document recording an electrostatic latent image thereon, means for developing the electrostatic latent image to form a toner image on the photoconductive member, and means for transferring the toner image from the photoconductive member to a copy sheet, wherein the improvement includes:

means for sensing the size of the original document with the original document being selected from a set of different size original documents with the size of each original document of the set being predetermined, said sensing means comprising N detectors mounted fixedly relative to the original document supported on the platen to measure N+2 different size original documents;

means for measuring the size of the copy sheet; and

means for comparing the size of the copy to the size of the original document and generating an error signal indicative of the difference therebetween.

4,585,333

SEPARATED COMMUNICATION BETWEEN ELECTROPHOTOGRAPHIC COPYING MACHINE AND ITS SUBSYSTEM

Toshio Yamagishi, Nara, Japan, assignor to Sharp, Kabushiki Kaisha, Osaka, Japan

Filed Jul. 12, 1984, Ser. No. 630,292

Claims priority, application Japan, Jul. 29, 1983, 58-140758

Int. Cl.⁴ G03G *15/00*

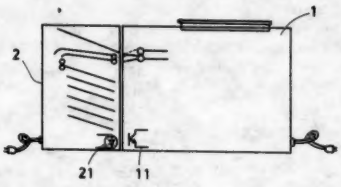
U.S. Cl. 355—14 R **11 Claims**

1. A system comprising:

an electrophotographic copying machine;

a subsystem provided for use with said copying machine for performing functions related to copying;

communication means for communicating all subsystem operation state information from said subsystem to said copying machine, while providing electrical isolation between the copying machine and the subsystem; and



control means, responsive to operation state information communicated by said communication means, for enabling copy operations in said copying machine.

4,585,334

DOCUMENT COPIERS

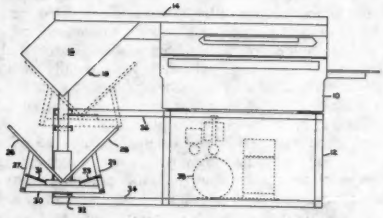
Brian R. Malyon, Feltham, England, assignor to The British Library Board, London, England

Filed Dec. 17, 1984, Ser. No. 682,154

Claims priority, application United Kingdom, Dec. 24, 1983, 8334478

Int. Cl.⁴ G03G *15/00*

U.S. Cl. 355—25 **9 Claims**



1. A document copier for producing a photocopy from a book having plural edge-connected pages, comprising:

a housing having a wedge section at least one face of which comprises a window which can be positioned against one of the pages of the book, with the ridge of the wedge in the fold of the book;

lamp means for illuminating the page positioned against the window;

optical scanning means co-operating with the lamp means to produce a succession of strip images of the illuminated page;

optical path means for applying the strip images to a photosensitive surface;

means for moving the photo-sensitive surface for assembly of the strip images thereon;

means for transferring the composite latent image so formed on to a sheet of paper and means for developing the resulting electrostatic image to form a final copy;

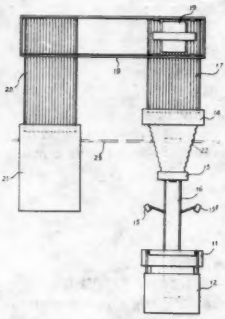
device means for moving at least one of the lamp means and part of the optical path means synchronously with means for moving the photo-sensitive surface to which the strip images are applied; and

a V-shaped book support for supporting a book beneath the wedge section housing, said book support comprising two upwardly divergent plates which are movably adjustable in horizontal spacing.

4,585,335
AUTOMATIC PROCESS CAMERA

Masanori Katayama; Miyauchi Yoshio, and Okada Akira, all of Hikone, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed May 16, 1980, Ser. No. 150,578
Claims priority, application Japan, May 29, 1979, 54-66997
Int. Cl.[4] G03B *29/00*
U.S. Cl. 355—29 4 Claims



1. An automatic process camera including an original feeder for feeding and removing successive originals to be reproduced to and from an original holder, a film feeder for feeding and removing successive frames of sensitized material to and from a film holder, exposure means for exposing a frame of sensitized material on said film holder to a projected image of an original on said original holder for a predetermined time, said original holder comprising an original board with an original receiving surface, and means for pivotally mounting said original board, means for positioning said original board in an exposure position wherein said original receiving surface is vertical and at right angles to the optical axis of the camera, in a loading position wherein said original receiving surface is horizontal, and in a removing position wherein said original receiving surface is inclined to the horizontal, means for synchronizing the operation of said original holder, said film holder, and said exposure means in appropriate coordination to produce a succession of exposures on successive frames of sensitized material of successive originals fed to said holder, said original feeder comprising an original rack for holding a stack of originals to be reproduced, means for moving one original at a time to the original board when the original board is in its horizontal position, means for receiving originals after exposure, and means aligned with a portion of the original and engageable with the original only when the original is on the board in the inclined removing position for removing the original to the means for receiving.

4,585,336
AUTOMATIC DUPLEX ELECTROPHOTOGRAPHIC COPYING MACHINE

Toyoki Tanaka, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 21, 1984, Ser. No. 612,571
Claims priority, application Japan, May 30, 1983, 58-97299; Jun. 21, 1983, 58-113182
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 SH 7 Claims

1. An automatic duplex electrophotographic copying machine comprising:

photoreceptor means for forming an image thereon;

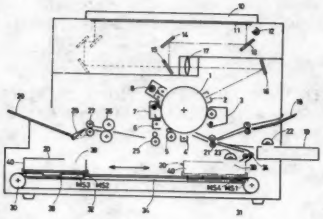
paper supply means for forming an image thereon;

paper supply means for supplying a copy paper toward said photoreceptor means;

copy enabling means inclusive of a light exposure means, developing means, and image transfer means for copying the image onto said copy paper;

paper expelling means for receipt of said imaged copy paper outside said copying machine;

paper storing and returning means adapted to be reciprocated horizontally between a first paper receiving position for receiving and storing said single-side copied paper and returning it to a second paper re-introduction position for



introducing said single-side copied paper to said paper supply means;

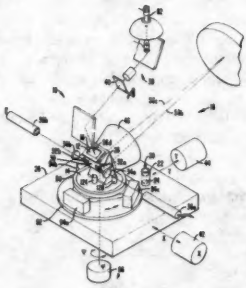
means for moving said paper storing and returning means between said first position of receiving said singl-side copied paper and said second paper re-introduction position; and

selection means for selecting whether to direct said copied paper to said expelling means or to said paper storing means.

4,585,337
STEP-AND-REPEAT ALIGNMENT AND EXPOSURE SYSTEM

Edward H. Phillips, P.O. Box 1042, Middletown, Calif. 95461

Filed Jan. 14, 1985, Ser. No. 692,011
Int. Cl.[4] G03B *13/28, 27/42;* G01B *11/26;* G01C *1/00*
U.S. Cl. 355—45 47 Claims



1. Photometric printing apparatus for printing an image from a first object, which first object has non opaque portions, onto a second object comprising:

a holder for holding the first object;

a stage for holding the second object;

a light source unit, optically disposed on one side of the holder and providing actinic and viewing wavelengths, for uniformly illuminating the first object;

a unit magnification catadioptric lens, optically disposed on the other side of the holder and between the holder and the stage, for projecting an image of the non opaque portions of the illuminated first object onto the second object along a forward path and for projecting conjugate images

the second object into a conjugate plane along a conjugate path including transmission in a reverse direction along a portion of the forward path;

first optical means, optically supplementing the portion of the unit magnification catadioptric lens nearest the holder, for providing a viewing port to permit viewing of a portion of a conjugate image of the second object, wherein the conjugate image is projected along the conjugate path and results when the second object is illuminated by the projected image of the non opaque portions of the first object; and

second optical means optically disposed for viewing the portion of the projected conjugate image from the viewing port.

4,585,338

PHOTOGRAPHIC COPYING APPARATUS

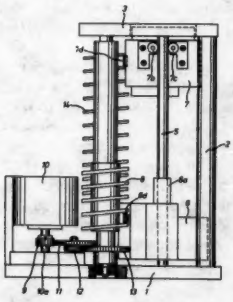
Wilhelm Nitsch; Walter Kieslich, and Helmut Treiber, all of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Oct. 22, 1984, Ser. No. 663,991

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1983, 3339960

Int. Cl.⁴ G03B *27/34, 27/40*

U.S. Cl. 355—56 **8 Claims**



1. A photographic copying apparatus, in which a plane of an original and a plane of a copying material are positioned at a stable distance from each other, and comprising an objective including two optical elements each provided with a step motor for adjusting the associated optical element in an axial direction thereof to thereby adjust a focus distance and various image scale in the apparatus; computer means connected to said step motors and controlling the latter through individual correction values of the objective applied into said computer means; a first memory (**16***a*), in which control values for a selected image scale for the adjustment of said optical elements due to calculated data of the objective and actually determined data of the objective are stored; and a second after-programmable memory (**18**) in which values of user's and apparatus specific data are stored, said computer means being connected to said first memory amd said second memory and operated so as to control said step motors for a selected image scale in accordance with the values stored in said first and second memory.

4,585,339

POWER CONTROL OF ELECTRONIC APPARATUS IN RESPONSE TO SURROUNDING BRIGHTNESS

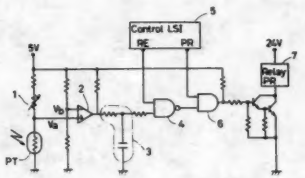
Yoji Senoo, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1984, Ser. No. 674,007

Claims priority, application Japan, Nov. 28, 1983, 58-183984[U]

Int. Cl.⁴ H01H *47/24*; G03B *27/72*

U.S. Cl. 355—69 **5 Claims**



1. Power control means in an electrophotographic copying machine, said power control means comprising:

photodetector means, responsive to the intensity of ambient light impingent thereon, for supplying a control voltage to said power control means;

means for supplying power to said copying machine;

copy enabling means, responsive to said means for supplying power, for said copying machine in a ready mode;

means for providing a reference voltage representative of a specific intensity of ambient light impinging on said photodetector means;

comparator means for comparing said control voltage and said reference voltage and for providing an output signal representative thereof;

means for delaying said output signal of said comparator means;

first gate means, responsive to the output signal of said comparator means and said copy enabling means, for providing a first output signal;

second gate means, responsive to the first output signal of said first gate means and said means for supplying power to said copying machine, for providing a second output signal; and

relay means, responsive to said second output signal representative of said intensity of ambient light impinging on said photodetector, for automatically turning said copying machine ON or OFF.

4,585,340

VACUUM PRINTING APPARATUS

Donald F. Buckingham, Chicago, Ill., assignor to Buckingham Graphics, Inc., Chicago, Ill.

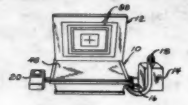
Filed Nov. 14, 1983, Ser. No. 551,016

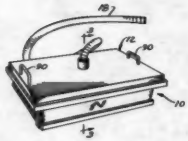
Int. Cl.⁴ G03B *27/20*

U.S. Cl. 355—91 **3 Claims**

1. Vacuum printing apparatus comprising a relatively wide light box of shallow height, a movable manually positionable vacuum box having an upper surface and disposed above and resting on said light box, a vacuum pump disposed remotely relative to said light box and said vacuum box, said vacuum box comprising an overlying rigid backing piece and an underlying plate having downwardly opening slots therein arranged in a plurality of rectangles and additional slots extending longitudinally, laterally, and diagonally across said rectangles and communicating therewith, and an underlying perforated screen adhesively secured to the lower surface of said underlying plate, a flexible vacuum hose extending between said vacuum pump and said upper surface of said vacuum box, said

vacuum box having an opening through said upper surface and said overlying backing piece and communicating with said





slots, and a plurality of handles on said vacuum box for lifting and for manual positioning of said vacuum box.

4,585,341

WIND SHEAR DETECTION

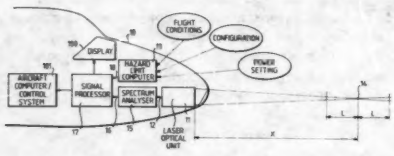
Alan A. Woodfield, Bedford, England, assignor to National Research Development Corporation, London, England

Filed Jun. 28, 1983, Ser. No. 508,531

Claims priority, application United Kingdom, Jul. 2, 1982, 8219119

Int. Cl.⁴ G01P *3/36;* **G01N** *21/00*

U.S. Cl. 356—28.5 **10 Claims**



1. Wind shear detection apparatus comprising:

a forward looking laser air speed sensor providing a signal containing information on air velocity over a range of distance about a measurement distance,

spectrum analyser means for identifing all velocities present in a time sample of the signal,

means for determining the instantaneous air velocity (V_I) at substantially the measurement distance,

means for determining the highest velocity V_M and lowest velocity V_N within said range of distances about the measurement distance,

means for determining differences between said instantaneous air velocity and: (1) said maximum air velocity V_M, and (2) said minimum air velocity V_N,

means for determining the rate of change of said instantaneous air velocity V_I,

means for computing a measure of wind shear hazard level from said differences and said rate of change, and

means for comparing the computed measure of wind shear hazard level with limits for acceptable wind shear in prevailing conditions thereby obtaining an advance warning of dangerous wind shear conditions which exist at said measurement distance

4,585,342

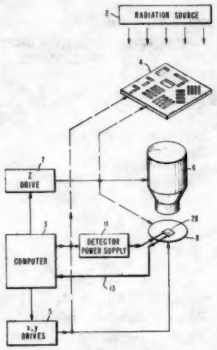
SYSTEM FOR REAL-TIME MONITORING THE CHARACTERISTICS, VARIATIONS AND ALIGNMENT ERRORS OF LITHOGRAPHY STRUCTURES

Burn J. Lin, Scarsdale, and Yuan Taur, Armonk, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,496

Int. Cl.⁴ G01J *1/06;* **G01B** *9/00*

U.S. Cl. 356—124 **10 Claims**



1. A system for real-time monitoring the characteristics of lithographic structures comprising lithographic projection means including a radiation source and radiation focussing means for projecting focussed radiation onto a desired plane,

a plurality of radiation sensitive detectors arranged in a matrix on a silicon wafer disposed in said desired plane, said detector producing an electrical output signal in response to radiation thereon,

means for sequentially changing the relative position between said silicon wafer and said radiation source and said focussing means in a direction parallel to said plane such that each one of said plurality of radiation sensitive detectors is separately disposed in sequence in the same location in the field of said projected radiation, and,

means connected to each of said plurality of radiation sensitive detectors for recording the detected output signals produced by said radiation for each of said detectors when located at said same location in said radiation field for calibrating said radiation sensitive detectors.

4,585,343

APPARATUS AND METHOD FOR INSPECTING GLASS

Richard D. Schave, Perrysburg; Walter D. McComb, Oregon, and Andrew W. Rudolph, Elmore, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Nov. 4, 1983, Ser. No. 548,684

Int. Cl.⁴ G01N *21/55, 21/89;* **G01B** *11/30*

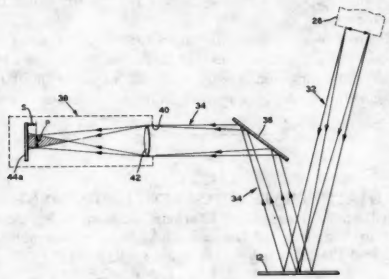
U.S. Cl. 356—237 **10 Claims**

1. An inspection apparatus for detecting surface distortion in a sheet of reflective material comprising:

a light source mounted to direct a first beam of light having a predetermined width toward a portion of the sheet at an oblique angle of incidence to cause a second beam of light to be reflected therefrom;

light detector means mounted to receive a light pattern produced by the second reflected beam for generating an output signal representing the width of said light pattern, said light pattern having a width which is a function of both the width

of the first beam and the surface distortion of the portion of the surface from which the second beam is reflected; and



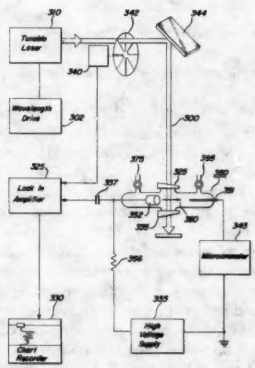
means responsive to the detector output signal for generating an actual distortion signal representing the amount of surface distortion in the inspected portion of the sheet.

4,585,344

DISCHARGE CELL FOR OPTOGALVANIC SPECTROSCOPY HAVING ORTHOGONAL RELATIONSHIP BETWEEN THE PROBE LASER AND DISCHARGE AXIS

Christopher R. Webster, Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 30, 1983, Ser. No. 556,514
Int. Cl.[4] G01J *3/443;* G01N *21/66*
U.S. Cl. 356—311 **8 Claims**



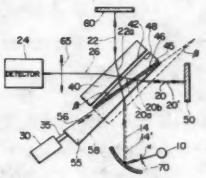
1. A laser optogalvanic (LOG) spectrometer, comprising:
a cell containing a gas-phase material at a low pressure;
means for creating a gaseous discharge region along one axis of said cell which discharge region comprises distinctly different discharge portions;
means for producing a single laser energy beam collimated orthogonally to intersect said discharge axis at preselected ones of said distinctly different discharge portions;
means for recording signals indicative of the interaction between said laser beam and said preselected portions of said discharge region;
said cell comprising a hollow longitudinal glass tube having a pair of electrodes housed therein and means for applying a discharge creating voltage to said pair of electrodes to form said discharge having said distinctly different portions along the longitudinal axis of said hollow tube;
means for sealably holding the pair of electrodes in said glass tube and adjustably sliding either or both of said electrode pair along said longitudinal axis, and
means for containing said gaseous discharge along said longitudinal axis with the discharge having a cross-sectional area substantially comparable in size to that of said laser beam.

4,585,345

DOUBLE BEAM INTERFEROMETER USING REFRACTIVE SCANNING METHOD

Masaru Inoue, Mito, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,529
Claims priority, application Japan, Mar. 11, 1983, 58-39005
Int. Cl.[4] G01J *3/45;* G01B *9/02*
U.S. Cl. 356—346 **12 Claims**



1. A double beam interferometer using the refractive scanning method, comprising:
a first fixed optical body having a pair of principal surfaces parallel to each other;
a second fixed optical body having a pair of principal surfaces, said principal surfaces meeting at an apex of a predetermined angle, said second fixed optical body being disposed in such a manner that one principal surface of said second fixed optical body facing said first fixed optical body is parallel to the principal surfaces of said first fixed optical body;
a movable optical body having a pair of principal surfaces, said principal surfaces meeting at an apex of said predetermined angle, said movable optical body being disposed in such a manner that one principal surface of said movable optical body facing said second fixed optical body is in close proximity to and parallel to the other principal surface of said second fixed optical body which faces said movable optical body, and said apex of said principal surfaces of said second fixed optical body and said apex of said principal surfaces of said movable optical body face in opposite directions;
means for sliding said movable optical body in a direction parallel to said one principal surface of said movable optical body facing said second fixed optical body and at least toward said apex of said movable optical body;
light source means for providing a light;
a semitransparent mirror portion provided on one of facing principal surfaces of said first and second fixed optical bodies for dividing light from said light source means into a first light beam passing through said semitransparent mirror portion and a second light beam reflected from said semitransparent mirror portion;
first and second reflecting mirrors disposed for respectively receiving said first and second light beams in an incident direction and for reflecting said first and second light beams in a direction opposite to said incident direction, respectively; and
detector means disposed for detecting the interference of said first and second light beams having been reflected back from said first and second reflecting mirrors, respec-

tively and then directed to the same optical path by said semitransparent mirror portion.

4,585,346

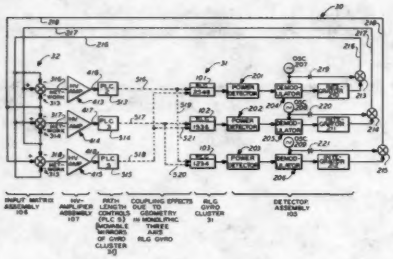
PATHLENGTH CONTROLLER FOR THREE-AXIS RING LASER GYROSCOPE ASSEMBLY

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Mar. 17, 1983, Ser. No. 476,447

Int. Cl.[4] G01C *19/64*

U.S. Cl. 356—350 **6 Claims**



1. A three axis gyro assembly including:

a support structure having an x-axis, a y-axis, and a z-axis intersecting at a point and disposed in quadrature;

first and second and third movable mirrors and first and second and third fixed mirrors supported by the support structure;

said first movable mirror and said first fixed mirror being disposed along the x-axis and equally spaced on either side of the intersection point;

said second movable mirror and said second fixed mirror being disposed along the y-axis and equally spaced on either side of the intersection point;

said third movable mirror and said third fixed mirror being disposed along the z-axis and equally spaced on either side of the intersection point;

first and second and third passageways of the support structure being respectively disposed in an x-plane and a y-plane and a z-plane, said x-plane and y-plane and z-plane being respectively normal to the x-axis and y-axis and z-axis.

each of said passageways having four corners formed by two of said movable mirrors and two of said fixed mirrors;

each of said passageways having anode means and cathode means forming first and second and third gyros; and

a pathlength controller for the three gyros, said controller comprising:

a detector assembly having first and second and third detector units respectively connecting to the first and second and third fixed mirrors and respectively adapted to measure an intensity modulation of its gyro beams, and

an input matix network assembly connecting to the detector assembly and connecting to the first and second and third movable mirrors,

whereby the pathlength of any one gyro can be changed in length without changing the pathlengths of the other two gyros,

wherein said input matrix network assembly comprises:

a first network having an output line connecting through an amplifier to the first movable mirror;

a second network having an output line connecting through an amplifier to the second movable mirror; and

a third network having an output line connecting through an amplifier to the third movable mirror; and

wherein each of said first and second and third networks includes an operational amplifier, said amplifier comprising:

an output terminal connecting through a high voltage amplifier to its movable mirror;

a positive input terminal having a positive input line connecting through a resistor to the first of the other two detectors;

a negative input terminal having a first negative input line connecting through a resistor to the second of the other two detectors, and having a second negative input line connecting through a resistor to its own detector.

4,585,347

ROTATION RATE MEASURING INSTRUMENT

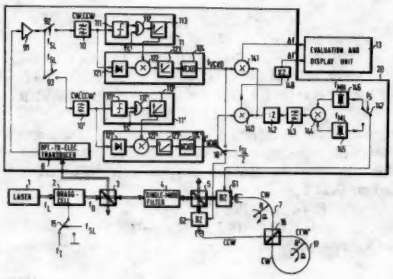
Wilfried Auch, Asperg, and Eberhard Schlemper, Vaihingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 16, 1983, Ser. No. 562,149

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3247013

Int. Cl.[4] G01B *9/02*; G01C *19/64*

U.S. Cl. 356—350 **8 Claims**



1. A rotation rate instrument comprising:

a light source;

means for shifting the frequency of a light beam from said source;

a first beam splitter which functions to divide said light beam from said light source into two component beams;

a first closed light path which is traversed by one of said two component beams leaving said first beam splitter in a clockwise direction and the other of said two component beams leaving said first beam splitter in a counterclockwise direction;

a second beam splitter which functions to divide each of said two component beams into two further component beams one of which remains in said first closed light path;

a second closed light path which is traversed by each of the other of said further component beams, one of said each of the other of said two further component beams traversing said second closed light path in a clockwise direction and the other of said each of said two further component beams traversing said second closed light path in a counterclockwise direction;

an optical to electrical transducer connected to an output of said first beam splitter so as to receive said two component beams and said two further component beams after the beams have been recombined in said first beam splitter; and

means connected to the output of said optical to electrical transducer and functioning to measure, at different times, the phase difference between component beams which have traversed only said first closed light path and the phase difference between component beams which have traversed both said first and second closed light paths.

4,585,348

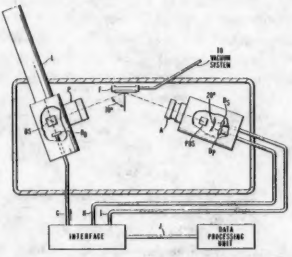
ULTRA-FAST PHOTOMETRIC INSTRUMENT

Jean-Claude A. Chastang, Mahopac; Walter W. Hildenbrand, Brewster, and Menachem Levanoni, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 306,559, Sep. 28, 1981, abandoned. This application Jan. 25, 1984, Ser. No. 573,783

Int. Cl.[4] G01N *21/21*

U.S. Cl. 356—369 7 Claims



1. An instrument for the static measurement of reflected intensities whose polarizations lie, parallel and perpendicular to the plane of incidence comprising:

(a) a source of a polarized beam,

(b) a first beam splitter for splitting said polarized beam towards a detector (D_o) and a sample,

(c) means for supporting said sample in the path of the beam,

(d) a second polarizing beam splitter for direct reception of the reflection of said beam from the surface of a sample in said sample position, and two detectors to receive only the parallel (D_p) and perpendicular (D_s) polarization components of said reflected split beam for computation of the index of refraction and film thickness of said sample by knowing the light intensities I_o, I_p and I_s associated with the respective detectors and without mechanical motion of the instrument components and without intermediate determination of the ellipsometric angles, ellipse orientation (ψ), elliptical phase difference (Δ).

4,585,349

METHOD OF AND APPARATUS FOR DETERMINING THE POSITION OF A DEVICE RELATIVE TO A REFERENCE

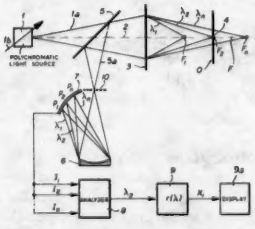
Daniel Gross, Carouge, and Claus Dähne, Onex, both of Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Sep. 12, 1984, Ser. No. 650,300

Claims priority, application Switzerland, Sep. 12, 1983, 4950/83

Int. Cl.[4] G01B *11/14, 11/00*

U.S. Cl. 356—375 14 Claims



1. A method of measuring the position of a surface element having at least a limited reflectivity capability, comprising the steps of:

generating a polychromatic light beam consisting of a plurality of rays of different wavelengths and substantially the same intensity;

focusing rays of respective wavelengths from said beam along a focal line at respective focal points, said elements lying along said line and reflecting light of at least several wavelengths including a wavelength of greater intensity corresponding to the wavelength whose focal point is substantially at the location of said element;

decomposing reflected light from said surface element into a spectrum of reflected wavelengths;

comparing the intensities of the light of the reflected wavelengths and ascertaining the wavelength of the compared intensities which is a maximum; and

establishing from the determination of the wavelengths of the reflected light of maximum intensity the focal point thereof and hence the position of said element with respect to a reference.

4,585,350

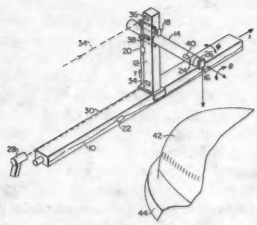
PULSED ROBOTIC INSPECTION

Timothy R. Pryor, Diffracto, 2775 Kew Dr., Windsor Ontario, Canada (N8T 3B7)

Continuation of Ser. No. 462,127, Jan. 28, 1983, abandoned. This application Jul. 30, 1985, Ser. No. 761,315

Int. Cl.[4] G01B *11/14, 11/24*

U.S. Cl. 356—375 4 Claims



1. A method for determining at least one dimension, location, or other characteristic of a part being inspected utilizing an optical sensor attached to an inspection machine, said method comprising the steps of:

providing a read command signal to cause the optical sensor to begin sensing and, at essentially the same time, determining a first position of at least one axis of the inspection machine,

determining a second position of said at least one axis when the sensor, in sensing the part, has accumulated sufficient data from sensing the part to provide a useful reading,

determining, from the first and second positions of said at least one axis, data related to the mean location of said axis, and

determining from a combination of said mean location data and said sensor reading, the characteristic of the part.

4,585,351

APPARATUS FOR INSPECTING SURFACE MOUNTED COMPONENTS

Fred J. Gronek, North Riverside; Raymond M. Taradejna, Bolingbrook, and Ray A. Watkins, Aurora, all of Ill., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Sep. 20, 1983, Ser. No. 534,031

Int. Cl.[4] G01N *21/01*

U.S. Cl. 356—388 7 Claims

1. An apparatus for precisely positioning and inspecting an

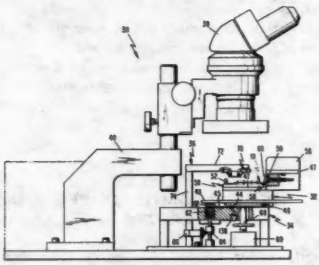
array of elements positioned on a base member, which comprises:

a table mounted for X-Y movement;

a workholder for supporting the base member movable with said table in planar fashion relative to an inspection site;

a template mounted on the table and secured to said workholder and including coded representations indicative of the positions of the elements on the base member, said representations being formed on an under surface of the template;

selectively operable means for locking said workholder to position an element at the inspection site;



a spring-biased sensor plunger positioned beneath the template and biased toward the under surface thereof for sensing the coded representations;

a cam mounted on a lower portion of the sensor plunger and moveable therewith for engaging and operating a switch to generate a signal indicating that an element is at the inspection site;

means operated by said signal for operating said selectively operable means to lock said workholder with the element at the inspection site;

visual inspection means mounted for movement toward and away from the inspection site; and

means responsive to the operation of said locking means for moving said visual inspection means to the inspection site.

4,585,352

SYSTEM FOR MEASURING THE OPTICAL DENSITY OF BOTH THE BACKGROUND AND THE IMAGE AREAS OF AN ORIGINAL

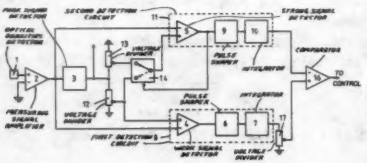
Willem G. J. Ritzerfeld, Venlo, and Bastiaan B. B. Eertink, Grubbenvorst, both of Netherlands, assignors to Océ-Nederland B.V., Venlo, Netherlands

Filed Oct. 28, 1983, Ser. No. 546,372

Claims priority, application Netherlands, Nov. 3, 1982, 8204260

Int. Cl.⁴ G01N *21/59*

U.S. Cl. 356—444 **7 Claims**



1. In a system for measuring the optical density of both the background and the image areas of an original, including means for detecting optical densities present on the original and generating a measuring signal representative of said densities, means for deriving from said measuring signal a peak signal level representing the optical density of the background of the original, first detection means for detecting first portions of the measuring signal that deviate more from said peak signal level than does a first reference signal level and producing a first output signal indicative of the number of detected first signal portions, second detection means for detecting second portions of the measuring signal that deviate more from said peak signal level than does a second reference signal level and producing a second output signal indicative of the number of detected second signal portions, and means for comparing said first and second output signals to derive a control signal,

the improvement wherein said system comprises control means rendering the magnitudes of said first and second reference signal levels each a function only of the magnitude of said peak signal level and causing the derived control signal to indicate in relation to said background density the relative amount of weak image information items to detected image information items on the original.

4,585,353

APPARATUS FOR THE PREPARATION AND APPLICATION IN SITU OF BLENDS OF STRUCTURAL MATERIAL

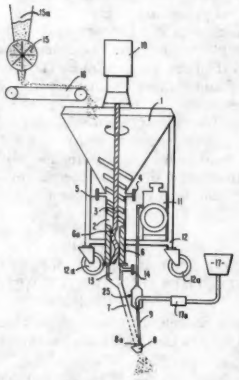
Horst Schönhausen, Im Staubenweidli 9, CH-8820 Wädenswil, Switzerland

Filed Mar. 26, 1984, Ser. No. 593,367

Claims priority, application Switzerland, Mar. 26, 1983, 1635/83

Int. Cl.⁴ B28C *5/08*

U.S. Cl. 366—11 **4 Claims**



1. An apparatus for the preparation and application in situ of a blend of structural material, comprising a filling hopper, a mixing chamber, a mixing element in said chamber, conveyor means comprising a conveyor pump and a transport hose line, a metering device for the premixed dry blend of binder and filler;

first inlet means for aqueous additive solution, an additive-solution metering device being connected with said mixing chamber via said first inlet means;

second inlet means for additional water, connected to the mixing chamber, a metering device for said additional water; and

at a point downstream of the conveyor pump, a concentric extrusion nozzle comprising a central inlet tube for the wet blend arriving from the mixing chamber, an annular chamber surrounding the central inlet tube, a peripheral inlet connected to said annular chamber; an extrusion zone in which said surrounding annular zone and said central inlet tube meet concentrically, and a common outlet tube.

4,585,354
DEVICE FOR PREPARING ROADWAY PAVING MATERIALS

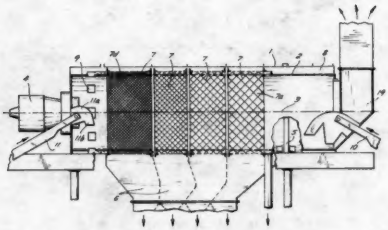
Klaus Thesenfitz, Winsen, Fed. Rep. of Germany, assignor to Linhoff & Thesenfitz, Winsen, Fed. Rep. of Germany

Filed Jun. 7, 1984, Ser. No. 618,097

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1983, 3320682

Int. Cl.[4] B28C 5/46

U.S. Cl. 366—25 5 Claims



1. A device for preparing roadway paving materials, comprising:

(a) an elongated drum having a horizontal longitudinal axis and rotatable about that axis,

(b) cylindrical screens surrounding the drum, the screens being arranged along the length of the drum, and successive screens having different sizes of mesh openings,

(c) a burner located at one end of the drum and adapted to direct a flame into the drum,

(d) means for feeding stone chips of different size into the end of the drum opposite the end at which the burner is located, and

(d) means for feeding used street paving asphalt material into the end of the drum at which the burner is located,

(f) the stone chips and asphalt being mixed within the drum.

4,585,355
CONCRETE MIXER TRUCK

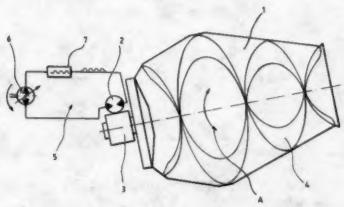
Franz Waitzinger, Nersingen, Fed. Rep. of Germany, assignor to Gerhard Hudelmaier, Ulm/Donau, Fed. Rep. of Germany

Filed Dec. 21, 1984, Ser. No. 685,024

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347310

Int. Cl.[4] B28C 5/24

U.S. Cl. 366—55 3 Claims



1. A concrete mixer truck having a drum wherein there are mixer elements that are moved to effect agitation of mixture in said drum, hydraulic actuating means drivingly connected with said mixer elements for moving the same, a pump, and hydraulic circuit means for delivering hydraulic fluid under pressure from said pump to said actuating means to energize the latter, said mixer truck being characterized by:

a vibration generator connected in said hydraulic circuit means, whereby hydraulic fluid delivered to said actuating means is pulsed so that the actuating means operates with a vibration that it imposes upon said mixer elements.

4,585,356
CONCRETE MIXER TRUCK

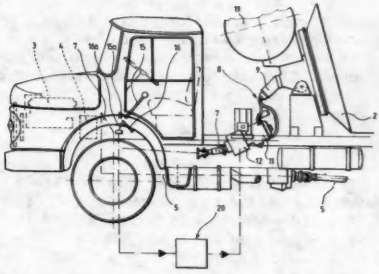
Gerhard Hudelmaier, Ulm, Fed. Rep. of Germany, assignor to Ingrid Hudelmaier, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,394

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1983, 3312218

Int. Cl.[4] B28C 5/42

U.S. Cl. 366—60 24 Claims



1. A concrete mixer truck having: a mixer drum; a traction motor; transmission means for rotating said drum operably connected to the traction motor; and control means for automatically disconnecting the drum rotating transmission means from the traction motor during predetermined travel conditions which are defined as an increased power demand for travel of the vehicle.

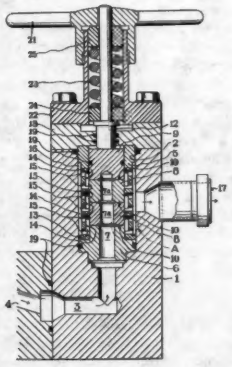
4,585,357
HOMOGENIZER

Kazuo Ogata, 536-3 Ooaza Shirasago, Yuki-cho, Saiki-gun, Hiroshima, Japan

Filed Oct. 18, 1984, Ser. No. 662,234

Int. Cl.[4] B01F 5/00, 5/06

U.S. Cl. 366—176 13 Claims



1. A homogenizer comprising:

a bearing valve seat that is inserted at an end of a homogenization cylinder, and that has a passage for homogenizing liquid fed by pressure to a center along an axis of the bearing valve seat;

a presser valve seat installed at an other end of the homogenization cylinder;

at least one cylindrical homogenizing valve which are disposed in series, and each of which has a homogenizing liquid passage in a center area along an axis of the homogenizing valve;

inter-valve microgaps formed along bordering portions between valve members consisting of the homogenizing valve(s), the bearing valve seat and the presser valve seat;

ring-formed spaces formed outside of the microgaps by cutting out either an inner wall of the homogenization cylinder or an outer wall of the homogenizing valve, whose walls located on the inner wall side of the homogenization cylinder are used as collision walls for the liquid jetted out from the microgaps; and

discharge ports which are formed on both sides of the collision walls along a width direction of the collision wall or at locations near the foregoing locations, and which are connected to a homogenized liquid passage formed along an outer circumferential surface of the homogenization cylinder.

4,585,358

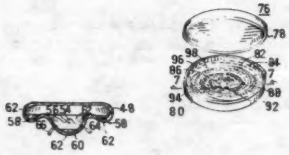
SHAKEABLE SHUTOFF ALARM CLOCK

Jonathan Shay, 141 Cedar St., Newton, Mass. 02159

Filed May 23, 1984, Ser. No. 613,295

Int. Cl.[4] G04B *23/00*

U.S. Cl. 368—262 **16 Claims**



1. An alarm clock which turns off the alarm by laterally shaking the clock, wherein the shakeable alarm clock comprises:

a time-keeping device with a sound generating alarm means connected by an electric alarm circuit to the time-keeping device;

an adjustable control switching means for activating the alarm circuit when the time-keeping device indicates a changeable preselected time, which control switching means closes a control switch on the alarm circuit upon a signal that the time-keeping device has reached the preselected time, which control switch automatically opens the alarm circuit is broken and remains open until the alarm circuit reactivates again;

a shakeable switching means to break the alarm circuit comprising a moveable conductor means normally positioned to make an electrical connection between two contacts in the alarm circuit, which movable conductor means is easily moved out of position upon laterally shaking the clock to break the alarm circuit connection and which movable conductor means returns to its original position remaking the connection between the contacts in the alarm circuit after the clock is in the next position.

4,585,359

BEARING ASSEMBLY

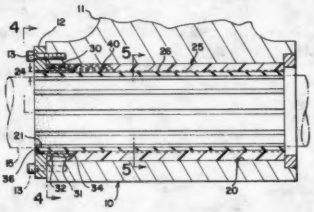
James H. Kramer, Akron, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 2, 1985, Ser. No. 782,785

Int. Cl.[4] F16C *17/14*

U.S. Cl. 384—98 **9 Claims**

1. A cylindrical bearing assembly having a cylindrical elastomeric sleeve for receiving a shaft and for supporting such shaft for rotation therein, at least one fiber reinforced elastomeric ply secured to said sleeve to define a fiber reinforced elastomeric sleeve with two end portions, a metallic annular flange



with a reduced hub secured to one end portion of said fiber reinforced elastomeric sleeve, a fiber reinforced cylinderical rigid plastic shell overlying and secured to said hub and said fiber reinforced elastomeric sleeve.

4,585,360

ELECTRONIC EQUIPMENT HAVING A CHARACTER SEQUENCE MEMORY AND A CHARACTER DISPLAY

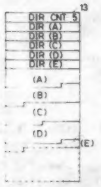
Hiroyuki Ueda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

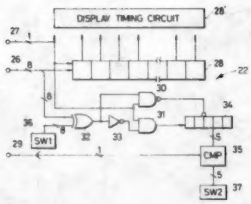
Continuation of Ser. No. 401,896, Jul. 26, 1982, abandoned. This application Aug. 15, 1984, Ser. No. 641,352

Claims priority, application Japan, Sep. 1, 1981, 56-136114; Sep. 1, 1981, 56-136115; Sep. 11, 1981, 56-142341; Sep. 11, 1981, 56-142342; Sep. 11, 1981, 56-142343

Int. Cl.[4] B41J *5/30*

U.S. Cl. 400—63 **18 Claims**





1. An electronic typewriter comprising:

memory means for storing a formated document as an electrical code;

register means for registering a predetermined length of the formated document;

transfer means for transferring the predetermined length of the formated document from said memory means to said register means;

a display instruction key for generating a display instruction;

display means having a display area for simultaneously displaying the predetermined length of the formated document registered in said register means; and

detection means for generating a detection signal when all the predetermined length of the formated document registered in said register means are a blank electrical code, wherein

said transfer means is responsive to either of said detection signal and said display instruction generated by said key to execute said transfer.

3. Electronic equipment comprising:

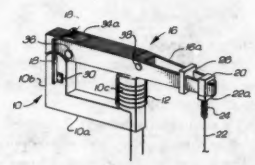
memory means for storing a plurality of character sequences; directory information including an index; the addresses of said character sequences and the number of characters in each of said sequences; and the number of said character sequences; and

control means for adding new character sequences and directory information for storage in said memory means; said control means being operable to modify the position of existing character sequences in said memory means to make space for the new directory information, to modify correspondingly the addresses in the directory information of the existing character sequences, to add the new directory information in the space provided by said movement of the existing character sequences, to add the new character sequence, and to modify correspondingly the number indicating the number of character sequences stored.

4,585,361
ACTUATOR FOR DOT MATRIX PRINTHEAD

Daniel A. West, Santa Clara, and Lawrence S. Nyi, San Jose, both of Calif., assignors to Dataproducts, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 580,656, Dec. 16, 1984, abandoned. This application Aug. 26, 1985, Ser. No. 769,668
Int. Cl.[4] B41J *3/12*
U.S. Cl. 400—124 **6 Claims**



1. A method of making an actuator for a wire matrix printer comprising the steps of:

providing a yoke assembly having a base portion and first and second leg portions extending from one side of the base portion, wherein the end of the first leg portion has a rounded surface;

providing an armature assembly having a rounded attachment surface complementary to the rounded surface of the first leg portion;

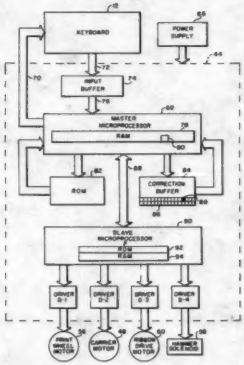
securing the armature assembly to the yoke assembly so that the rounded attachment surface contacts and conforms to the rounded surface of the first leg portion and so that the armature assembly extends across the second leg portion, the step of securing including providing at least one flexure element extending from the armature assembly to the first leg portion to support the armature assembly for pivotal movement with respect to the first leg portion about a central axis of the rounded surfaces; and

pivoting the armature assembly with respect to the first leg portion for a run-in period to cause the rounded surfaces to rub against each other and form a gap therebetween which is maintained by the flexure element.

4,585,362
ONE-TOUCH CHARACTER CORRECTION AND REPLACEMENT SYSTEM

R. William Gray, Ithaca, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Dec. 7, 1984, Ser. No. 679,342
Int. Cl.[4] B41J *29/367*
U.S. Cl. 400—697.1 **6 Claims**



1. A character correction and replacement system for use in an electronic correcting typewriter having a keyboard including a plurality of character and function keys selectable for issuing unique signals, a platen, a carrier, a printing mechanism supported on the carrier for printing characters at selected print positions on a recording medium supported on the platen, a correction mechanism for erasing previously printed characters from the recording medium, bi-directional feeding means for horizontally moving the carrier relative to the platen, electronic processor means for receiving the unique signals from selected keyboard keys and for controlling functional operation of typewriter mechanisms in accordance to the signals received, a correction buffer connected to the processor means, the correction buffer including a plurality of memory registers capable of storing therein character codes representative of the last plurality of printed characters and cursor means operative in the correction buffer for pointing to a selected one of the plurality of memory registers and the memory register pointed to by the cursor means relating to the current print position of the carrier, the character correction and replacement system comprising:

actuation means selective for generating a discrete signal representative of a replacement character and said discrete signal being communicated to the correction buffer for addressing the memory register pointed to by the cursor means and relating to the current print line position of the carrier; and

control means responsive to said discrete signal addressing the memory register for generating a character correction and replacement command signal dependent upon the addressed memory register containing a stored character code of a previously printed character and said command signal utilized in the processor means to recall said character code for operating the correction mechanism to erase said previously printed character at the current print line position of the carrier and hence for operating the printing mechanism to print said replacement character selected by said actuation means.

4,585,363

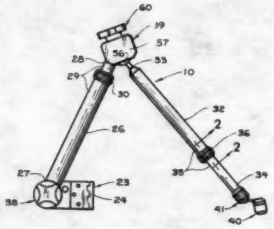
THERAPEUTIC AID

Kevin C. McGuire, 321 Speedway, Missoula, Mont. 59802

Filed May 23, 1984, Ser. No. 613,215

Int. Cl.[4] B43K *29/00*; A61F *2/68*

U.S. Cl. 401—6 **24 Claims**



1. A therapeutic device for use in developing fine, medium and gross motor movements of a patient's arm and hand, comprising:

a base;

means on the base for securing the base to a relatively stationary object such as a chair or desk;

an elongated upper arm member having a shoulder end and a distal end;

shoulder joint means on the base mounting the upper arm member at the shoulder end thereof for pivotal movement about a single shoulder pivot axis transverse to the upper arm member between prescribed angular limits;

first selective resistance means on the shoulder joint means, for affecting flexion and extension of the patient's arm by providing even continuous selective resistance to pivotal motion of the upper arm member about said shoulder pivot axis in relation to the base;

an elongated forearm member having a distal end and a proximal end;

elbow joint means articulating the forearm member and upper arm member at their respective proximal and distal ends for three dimensional rotary motion between prescribed angular limits about a center point;

second selective resistance means on the elbow joint means, for affecting adduction and abduction of the patient's arm by providing selective even continuous resistance to three dimensional pivotal motion of the forearm member about said center point; and

grip means at the distal end of the forearm member for access by the patient's arm such that the patient's arm can be moved against selective resistance set by the first and second resistance means through an area defined by the shoulder and elbow joint means.

4,585,364

BALL PEN COMBINED WITH ELECTRONIC WATCH

Dar-Kuei Liaw, P.O. Box 10160, Taipei, Taiwan

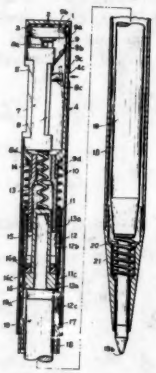
Filed Sep. 27, 1982, Ser. No. 424,296

Int. Cl.[4] B43K *29/00, 29/08*; G04B *37/00, 37/12*

U.S. Cl. 401—195 **2 Claims**

1. A ball pen combined with electronic watch comprising:

a hollow pen cap, an inner jacket fixed within said pen cap, an electronic watch embedded in said inner jacket, an outer spring backing the lower portion of said inner jacket, a resilient conductor formed with two resilient conducting plates each terminated with a hook and tensioned under said outer spring, a shifting stabilizer clamped by said resilient conductor and formed with several lengthy extensions therein, and formed with two holes for said hooks of said resilient conductor extending therethrough, a connector connected with the lower portion of said shifting stabilizer, a lower penholder fixed under said connector, an innermost spring positioned and tensioned under said electronic watch, a contacting bolt positioned under said innermost spring and formed on its lower portion with a setting wheel having a following gear, said setting wheel having contacting surfaces a driving rod inserted in the lower hollow portion of said inner jacket and formed with a driving gear on its lower portion to reciprocatively move within said shifting stabilizer and movably drive said following gear, an inner refill tube positioned under said setting wheel and a power cell fixed between said electronic watch and an uppermost cover by a spiral spring inserted under said uppermost cover; the improvement which comprises: an electronic watch having a printed circuit board, which is formed with a first contactor on the top end of said watch to contact one electrode of said power cell; a second contactor formed as a resilient plate connected to said inner jacket to electrically contact said pen cap, said uppermost cover, said spiral spring and another electrode of power cell for normal time indication; a third contactor extending from said



printed circuit board to an end slightly separated from a resilient plate formed on said inner jacket and being internally connected to a re-set pin of an integrated circuit of said printed circuit board; and a fourth contactor positioned under said electronic watch to electrically contact said innermost spring, whereby, when depressing said pen cap to lower said driving rod, said driving gear will force said following gear along the length extensions formed in said shifting stabilizer to be held at the lowest end of said lengthy extensions to extend said inner refill tube with ball point for writing use and at the same time, the hooks of said resilient conductor extending through the holes of said shifting stabilizer electrically contact the contacting surfaces of said setting wheel, said contacting bolt, said innermost spring and said fourth contactor of printed circuit board to close an electric circuit through said first contactor, said power cell, said spiral spring, said uppermost cover, said pen cap, said inner jacket, said outer spring, said resilient conductor so as to shift the normal operation of said electronic watch to another operation.

4,585,365

POST AND BEAM CONSTRUCTION

Joe Manno, 5720 Oberlin Dr., San Diego, Calif. 92121

Filed Apr. 27, 1984, Ser. No. 604,899

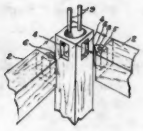
Int. Cl.[4] F16B *12/12*; A47B *3/06*; E04G *9/00*

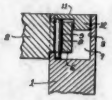
U.S. Cl. 403—6 **1 Claim**

1. An all-wood, three dimensional post and beam construction comprising:

(a) a wooden post defining a longitudinal axis;

(b) a coaxial bore defined into one end of said post and being accessible externally of said post;
(c) a pair of cutaways defined into said post, said cutaways being entrant through said post into communication with said cavity and defining mutually orthogonal axes with each other and with the longitudinal axis of said post;
(d) a pair of wooden beams each having a tongue insertable through a respective one of said cutaways;
(e) said cutaways and tongues are substantially identical in cross-section to define a flush fit, said tongues each defining a retaining bore therein and including a retainer pin passing through each of said retaining bores and extending out of the respective one of said retaining bores at at least one end to bear against the wall of said coaxial bore to lock the respective tongue within said coaxial bore;





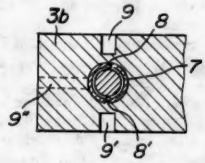
(f) said tongues being tapered inwardly in a horizontal plane to define a right angular edge which is vertically extended, and said tongues and cutaways being dimensioned such that the ends of said tongues dovetail together within said coaxial bore to occupy half of same to define a semi-circular void in the remainder of said coaxial bore; and
(g) a wooden cap dimensioned to fit within said coaxial bore adjacent the ends of said pins to prevent their dislodgement from their respective retaining bores and having a generally semi-circular plug depending into said semi-circular void to prevent the prying off of said cap and to further prevent the rotation of said cap within said bore, thus reducing the posibility of said cap becoming dislodged and freeing said pins.

4,585,366

FLEXIBLE CONNECTOR

Kanzaburo Uchida, Mooka, Japan, assignor to Daiichi Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1984, Ser. No. 684,627
Claims priority, application Japan, Dec. 28, 1983, 58-199315[U]
Int. Cl.⁴ F16B *41/00*
U.S. Cl. 403—21 **7 Claims**



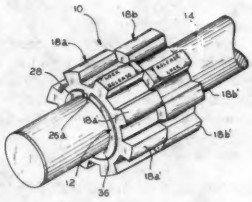
1. A flexible connector including a molded body of soft material integrally molded with a connector body, said molded body including at least one mounting lug in which a sleeve fitting aperture is formed, at least one locking screw associated with said molded body and threadedly engaging internal threads of a mating device such as a receptacle, said connector comprising, at least one sleeve having an inner diameter larger than the outer diameter of a screw-threaded portion of said locking screw and fitted in said sleeve fitting aperture, said sleeve including on its inner-facing surface at least one latch protrusion extending inwardly at a location corresponding to the shank of said locking screw having an outer diameter less than said outer diameter of said screw-threaded portion so as to prevent said screw-threaded portion of the locking screw from passing through the sleeve, said mounting lug including at least one hole formed therein for facilitating forming of the latch protrusion.

4,585,367

RELEASABLE LOCKING DEVICE

John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Feb. 5, 1985, Ser. No. 698,450
Int. Cl.⁴ F16B *7/10, 2/02*
U.S. Cl. 403—104 **13 Claims**



1. A releasable locking device for frictionally engaging a bar member, comprising:
a cam sleeve adapted to be adjustably positioned in selectable locations along said bar member, said cam sleeve haivng an internal surface generally conforming in shape to the external surface of said bar member entirely along the length of said cam sleeve and said internal surface of said cam sleeve normally being dimensioned the same as or larger than said bar member so as to be slidably movable along said bar member for adjustably positioning said cam sleeve in a selected location, said cam sleeve being formed of a resilient material for selective radially uniform compressed frictional engagement with said external surface of said bar member; and
a pair of cam collars adpated to be operably disposed in substantially coaxial axially fixed and oppositely directed relation on said cam sleeve, said cam collars each having a continuous internal cam surface adapted to cooperate with a mating external cam surface on said cam sleeve to reduce the dimension of said internal surface of said cam sleeve for selective radially uniform compressed frictional engagement with said bar member in response to opposing axially stationary rotation of said cam collars relative to said cam sleeve in locking directions, said cam collars cooperaing with said cam sleeve to define a pair of interconnected individual locking members.

4,585,368

SUCKER ROD ASSEMBLY

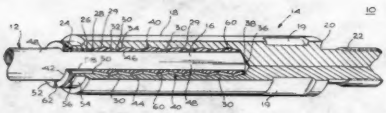
Augustine J. Pagan, 1117 Lorna Dr., El Cajon, Calif. 92020

Filed Sep. 17, 1984, Ser. No. 650,912
Int. Cl.⁴ F16B *11/00*
U.S. Cl. 403—266 **26 Claims**

1. An improved sucker rod assembly, said assembly comprising, in combination:
a. a sucker rod; and

b. a pair of fittings secured to opposite ends of said rod, each said fitting including

i. a rigid casing having interior end and side surfaces defining a cavity therein in which an end of said sucker rod is disposed, said interior side surface having a plurality of internally directed wedges disposed along the length thereof, each said wedge comprising a pair of sloped interconnected wall portions, said wedges collectively having a wave-like form along the length of said interior surface; and,



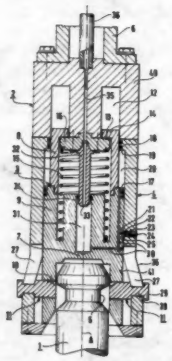
ii. a plurality of separate rigid inserts, each said insert extending substantially the length of said plurality of wedges and along a portion of the periphery thereof and disposed between said wedges and said rod end in said cavity, the exterior surfaces of said plurality of inserts collectively conforming to the wave-like flange-defining interior side surface of said casing, said inserts being tightly bonded to the exterior of said rod end by a thin uniform layer of set adhesive to hold said rod end centered securely within said fitting cavity, said inserts being unbonded to the casing interior surfaces.

4,585,369

MECHANICAL CONNECTION MEANS

Jean-Pierre Manesse, Basse Goulaine, and Jacques Angibaud, Nantes, both of France, assignors to Alsthom-Atlantique, Paris, France

Filed Nov. 28, 1984, Ser. No. 675,389
Claims priority, application France, Dec. 1, 1983, 83 19213
Int. Cl.[4] B25G *3/18*; F16B *21/00*
U.S. Cl. 403—322 **5 Claims**



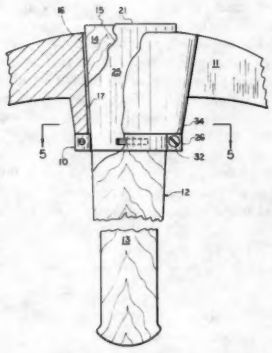
1. Mechanical connection means for joining a substantially vertical tension line, or tether, to a tether anchoring point, comprising a female connector and a male connector, said male connector being part of the anchor and comprising a cylindrical part provided with a circular groove, wherein said connection means the male connector is vertical, the female connector capping and overlapping the male connector from above and comprising a body, a cap and a sleeve, said body being fastened to the lower end of said tether, said cap consisting of a hollow cylinder open at both ends and comprising an inside wall for bearing on the top end of said male connector, said wall dividing the cap into a top part and a bottom part, said bottom part being provided with a circular series of radial openings issuing, when the cap is in bearing position, into said groove, each opening being equipped with a radially sliding finger, the top part being suspended and free to slide axially inside a first annular chamber provided in said body, said sleeve having a bore surrounding said cap and being suspended, when lowered, for a shoulder on said cap, the axial sliding of said sleeve relative to said cap from this position creating a second annular chamber between the outside wall of the top of the cap, the inside wall of the top part of the sleeve, said shoulder and a step in said bore of said sleeve, said fingers and said sleeve having cooperating means so that the axial movement of the sleeve relative to the cap will cause the fingers to slide radially in or out depending on the direction of said relative axial movement, said cap containing a first hydraulic fluid input channel one end whereof issues at the level of the said shoulder and the other in said top part of said cap, said first channel being continued by a second channel bored into said body, the bottom end whereof issues into said top part of the cap and the top end whereof issues outside the body where it connects to a hydraulic line.

4,585,370

RETAINING DEVICE FOR A PICK HEAD AND PICK EQUIPPED THEREWITH

Vernon F. Rose, P.O. Box 324, Providence Forge, Va. 23140

Filed Apr. 29, 1985, Ser. No. 728,034
Int. Cl.[4] B25G *3/00*; A01B *1/22*
U.S. Cl. 403—334 **7 Claims**



1. A retainer device adapted to be associated with a pick head positioned upon the outwardly tapered head portion of a wooden pick handle, said device comprising:

(a) an elongated thin bendable harness of integral monolithic construction having short and long axes of symmetry and two longitudinal extremities equally disposed about said short axis, said harness being adapted to lie in closely conforming contact with the head portion of a wooden pick handle in a manner such that said longitudinal extremities are in facing disposition on opposite sides of said handle,

(b) retaining shoulders disposed upon the same surface of said harness adjacent said longitudinal extremities, whereby said shoulders are directed away from said wooden pick handle in horizontal alignment and normal to the handle axis when the harness is in its closely conforming contact with said head portion,

(c) a pair of substantially identical holding collars adapted to fit around the handle in close conformity therewith and in engagement with said retaining shoulders, and

(d) fastening means adapted to draw the holding collars

tightly together in gripping contact with said shoulders, whereby

(e) the pick head is caused to abut said holding collars.

4,585,371

LINING OF TUBULAR STRUCTURES

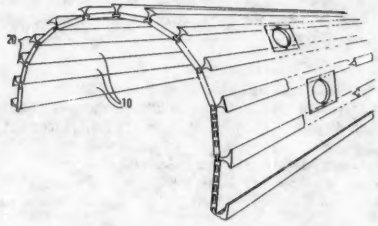
James Jones-Hinton, Cumbria, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 357,218, Mar. 11, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 643,753

Claims priority, application United Kingdom, Mar. 14, 1981, 8108058

Int. Cl.[4] E21D *11/00*

U.S. Cl. 405—153 **14 Claims**



1. Method of lining a tunnel structure comprising:

feeding into the structure a plurality of longitudinally flexible elongate elements at least some of which are lining elements of a kind having at least one cavity which extends substantially continuously in the direction of the length of the element and at least some of which are spacer elements each comprising a longitudinally extending rib-like formation, said lining elements and spacer elements each having a pair of longitudinally extending edge formations each for interlocking assembly with a complementay shaped edge formation of an adjacent elongate element of the lining arranging said lining elements and said spacer elements to extend substantially parallel with the direction of the length of the structure with the elements disposed in a side-by-side and interlocking configuration in which the complementary shaped edge formations of adjacent elements are interlocked to form a lining which conforms substantially to the surface of the tunnel structure, the rib-like formations of the respective spacer elements being arranged to lie outwards of the lining wholly between the surface of the tunnel structure and that inward facing surface of the lining defined by the lining elements and to maintain the lining elements spaced from the internal surface of said tunnel structure; and then injecting into said cavities a settable compound and allowing said settable compound to set.

4,585,372

PIPELINE PLOUGH WITH LIFTING ASSEMBLIES

Timothy W. Grinstead, Ovingham, and Alan R. Reece, Wylam, both of England, assignors to Soil Machine Dynamics Limited, Northumberland, England

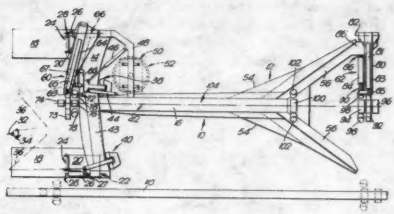
Filed Nov. 30, 1984, Ser. No. 677,025

Claims priority, application United Kingdom, Nov. 30, 1983, 8331892

Int. Cl.[4] F16L *1/04*

U.S. Cl. 405—159 **9 Claims**

1. A pipeline plough comprising a base structure, a plough body and ploughing depth adjusting means both said body and said means forming part of said base structure, front and rear lifting assemblies carried by said base structure and spaced apart in the lengthwise direction thereof, front and rear bearer means and front and rear actuator means forming parts of said front and rear assemblies, respectively, said actuator means being operable to adjust said respective assemblies to lift the pipeline supported by said bearer means while the plough is positioned to one side of the pipeline and to support the pipeline while the plough approaches the pipeline from said one side to position said plough body beneath the pipeline.



4,585,373

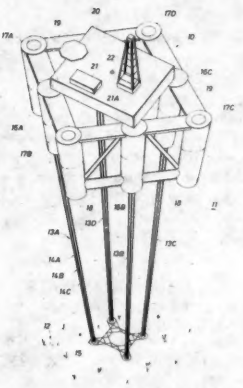
PITCH PERIOD REDUCTION APPARATUS FOR TENSION LEG PLATFORMS

Bruce G. Collipp, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 27, 1985, Ser. No. 716,318

Int. Cl.[4] E02B *17/00*; B63B *35/44*

U.S. Cl. 405—224 **11 Claims**



1. An apparatus for use in decreasing the pitch period of a tension leg platform, said platform having a center of gravity and floating in a body of water having a marine bottom, said platform said platoform having interior buoyant member means, the upper portion of said interior buoyant member means connected to a deck mass, the lower portion of said interior buoyant member means operatively engaged in tension to anchor means secured to said marine bottom, said interior buoyant means arranged in a manner wherein they form the corners of a horizontal interior polygon about said center of gravity of said platform, said apparatus comprising;

exterior buoyant member means in the form of buoyant columns operatively connected to said interior buoyant member means, said exterior buoyant member means arranged in a manner wherein they form the corners of a horizontal exterior polygon, at least a portion of the sides of said exterior polygon located outside the sides of said interior polygon, when viewed from a direction perpendicular to said interior and exterior polygons.

4,585,374

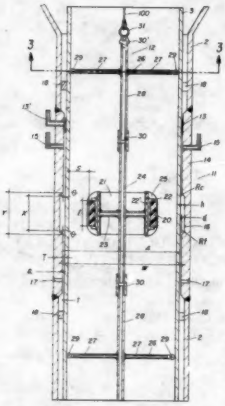
HIGH ENERGY FORMED CONNECTIONS

John A. Regalbuto, Fort Worth, and James E. Dailey, Houston, both of Tex., assignors to Jet Research Center Inc., Arlington and Brown & Root, Inc., Houston, both of, Tex.

Continuation-in-part of Ser. No. 65,494, Aug. 16, 1979, abandoned. This application Apr. 25, 1980, Ser. No. 143,563

Int. Cl.[4] E02B *17/00;* **B23P** *11/00*

U.S. Cl. 405—227 **39 Claims**



1. A method for connection of two conduits in a liquid environment, comprising;

placing a first conduit in the interior of a second, larger conduit;

removing a liquid from between said first and second conduits in the vicinity where said connection is to be made;

deforming said first conduit outwardly with a high energy source into contact with the inside wall of said second conduit, whereby a connection between said conduits is made.

4,585,375

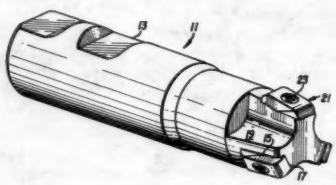
MILLING INSERTS

Donald S. Erkfritz, Clarkston, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Feb. 10, 1984, Ser. No. 578,919

Int. Cl.[4] B23B *27/16, 27/22;* **B23C** *5/20*

U.S. Cl. 407—114 **10 Claims**



1. A cutter insert adapted to be supported on a flat platform on a cutter body and abutting edgewise against walls upstanding from a corner of said platform, said insert comprising

a substantially flat block of cutting material having an upper surface and a lower mounting surface, the block having the geometrical shape of a parallelogram with a center hole extending therethrough between the upper surface and the mounting surface of said block to receive a screw for securing said block to said platform, said upper surface terminating at opposite ends in equal radii;

a rake face and a clearance face on opposite sides of said surfaces, said surfaces and said faces constituting cutting edges defined by the intersections of said faces and said upper surfaces;

an angular facet having a radius cutting edge on the rake face forming a juncture line at the intersection of the rake face and the angular facet at diagonally opposed corners of said radii and extending inwardly of said upper surface and said mounting surface so as to form a chip splitter at the juncture of the cutting edge of said rake face and the radius cutting edge of said angular facet, the juncture being at the point of tangency of the cutting edge of said rake face and the cutting edge of said angular facet; and

a leading cutting edge at the corner where the juncture line of the rake face and the angular facet meets the radius.

4,585,376

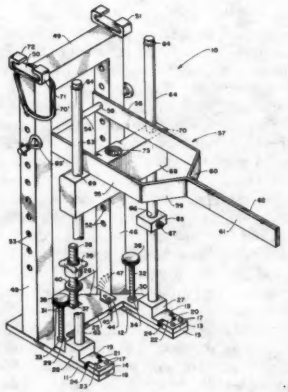
SAFE LOCK DRILLING APPARATUS

William R. Davenport, Sr., P.O. Box 1390, Georgetown, Calif. 95634, and Wayne T. Colborn, P.O. Box 2234, Placerville, Calif. 95667

Filed May 14, 1984, Ser. No. 610,037

Int. Cl.[4] B23B *39/00*

U.S. Cl. 408—110 **11 Claims**



1. An apparatus for drilling out the tumblers of a safe or the like comprising:

a flat base plate having a cut-out portion therein;

a tilt plate pivotally connected to said base plate on opposite sides of said cut-out portion;

tilt plate angle adjusting means engaging both said base plate and said tilt plate for tilting said tilt plate in an angular relationship to said base plate and preventing said tilt plate from accidentally pivoting toward said base plate;

lock means associated with both said tilt plate and said base plate for locking said tilt plate in a direction away from said base plate;

a first pair of spaced support members extending vertically upwardly from said base plate, remote from said cut-out portion;

a plurality of aligned vertically spaced apertures in each of said support members;

a second pair of spaced support members extending vertically upwardly from said tilt plate;

a block member having a vertical throughbore connected to said second pair of support members having said second pair of support members passing therethrough, said block

member being movable along said second pair of support members;

a handle member fixedly and removably secured to said first pair of said support members above said block member, said handle member being a Y-shaped member having a first pair of spaced legs coupled to each of said first pair of support members by a removable rod extending through both aligned apertures in each of said first pair of support members and in said spaced legs, said spaced legs extending to and meeting at an elongated handle portion, said Y-shaped member being pivotal with respect to said first pair of support members and adapted to abut against said block member; and

a drill shaft extending through said throughbore in said block member, bearing means on opposite sides of said block member surrounding said throughbore receiving said shaft therethrough, said shaft being rotatable within said bearing means and having a first portion on one side of said block member adapted to be connected to the chuck of a drill and a second portion on the other side of said block member connected to a chuck retaining a drill bit therein, said Y-shaped member being unconnected to said block member and independent thereof but abutting against and bearing down against said block member, when said drill shaft extends through said throughbore, with said spaced legs disposed on opposite sides of said drill shaft between said chuck retaining said drill bit therein, and said block member, thereby enabling said drill shaft to rotate within said bearing means while said Y-shaped member can be pivoted against said block member.

4,585,377

NUMERICAL-CONTROLLED MACHINE TOOL

Ryoichiro Nozawa, Shibuya; Hideaki Kawamura, Hachioji, and Shuji Matsuura, Hino, all of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

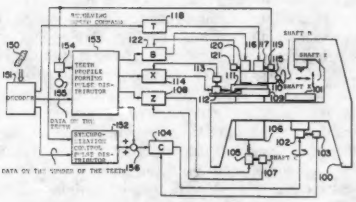
PCT No. PCT/JP82/00197, § 371 Date Jan. 27, 1983, § 102(e) Date Jan. 27, 1983, PCT Pub. No. WO82/04210, PCT Pub. Date Dec. 9, 1982

PCT Filed May 26, 1982, Ser. No. 463,870

Claims priority, application Japan, May 29, 1981, 56-82381

Int. Cl.[4] B23F *5/22, 15/02*

U.S. Cl. 409—2 **5 Claims**



1. A numerical-controlled machine tool control system for cutting a gear, using a gear hobbing machine, gear grinding machine or the like based on a received gear command including a number of teeth to be cut and a tooth profile, said tool comprising:

a synchronization control pulse distributor for controlling a synchronous relationship between rotation of a cutter and rotation of a gear blank which is determined by the cutter and rotation of a gear blank which is determined by the number of teeth of a gear to be cut based on the gear command;

a tooth profile forming pulse distributor for controlling at least a vertically-moving shaft of the cutter or the gear blank and a rotary shaft of the gear blank for forming the tooth profile of the gear to be cut which is determined by the tooth profile from the gear command; and

an adder for adding together distribution pulses from said tooth profile forming pulse distributor and said synchronization control pulse distributor to produce command pulses for application to the rotary shaft of the gear blank.

4,585,378

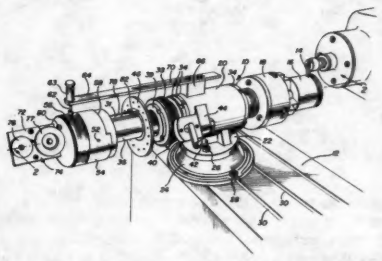
DIVIDING HEAD WITH CAM AND THREAD CUTTING FACILITY

Keegan Carter, 2805 Darwin, Kilgore, Tex. 75662

Filed Sep. 28, 1984, Ser. No. 655,735

Int. Cl.[4] B23C *3/28*

U.S. Cl. 409—67 **10 Claims**



1. A dividing head assembly comprising concentric outer and inner primary and secondary shafts journalled in a body member having a base for mounting the assembly on a machine tool bed and the like, means coupling the inner shaft for rotation with the outer shaft and for axial sliding movement in the outer shaft, the inner shaft having means for attaching a workpiece holder at one end thereof, means for attaching profiled means to the inner shaft defining a master thread or a master cam, drive means for rotating the shafts, follower means for engaging the profiled means and imposing axial movement on the inner shaft controlled by the profiled means responsive to operation of the drive means whereby the workpiece holder may be provided with controlled axial movement accompanied by rotation thereof for screw or cam forming a workpiece, and releasable coupling means operative between the shafts for locking the inner shaft against axial movement in the outer shaft whereby upon disengagement of the follower means from the profiled means, operation of the drive means provides rotation of the workpiece holder without axial movement thereof.

4,585,379

PRECISION POSITIONING DEVICE

Kazuhiko Nagayama, Kanagawa; Masami Masuda, and Yukio Maeda, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,632

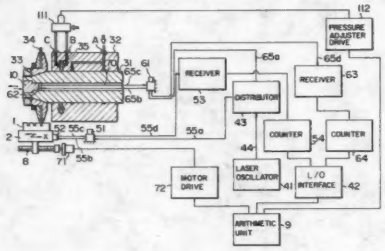
Claims priority, application Japan, Dec. 27, 1980, 55-187128; Sep. 2, 1981, 56-136981

Int. Cl.[4] B23Q *15/00;* **G01B** *9/02*

U.S. Cl. 409—147 **10 Claims**

1. A precision positioning device comprising a mounting section for supporting a workpiece, a working section having a working tool attached thereto, and feed means mounted on at least one of said mounting section and said working section for positioning the workpiece and the working tool relative to each other in a direction along a predetermined axis, such precision positioning device further comprising a first laser instrument comprising a first reflector mounted on the mounting section for reflecting a laser beam to enable the position of the mounting section in a direction along said predetermined axis to be read out, a second laser instrument comprising a second reflector arranged in the working section for reflecting a laser beam to enable the position of the working section in a

direction along said predetermined axis to be read out, means for calculating the distance between the workpiece and the working tool in a direction along said predetermined axis based on the read outs obtained from the first laser instrument and the second laser instrument, and wherein the feed means is operable for positioning of the workpiece and the working tool relative to each other in a direction along said predetermined



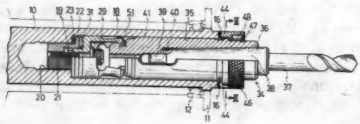
axis on the basis of the distance calculated by the means for calculating, wherein said working section is a rotary shaft having the working tool attached to one end thereof, said rotary shaft being formed with a bore extending axially therethrough and having the second reflector mounted therein for reflecting the laser beam in a position substantially immediately below the working tool.

4,585,380

TOOL ATTACHING DEVICE IN A MACHINE TOOL

Tsutomu Naito, Aichi, Japan, assignor to NT Tool Kabushikikaisha, Japan

Filed May 3, 1984, Ser. No. 607,102
Claims priority, application Japan, May 18, 1983, 58-87268
Int. Cl.[4] B23B *31/10*; B23C *7/00*
U.S. Cl. 409—234 **3 Claims**



1. A tool attaching device in a machine tool including:
a rotatable spindle,
an installing and removing member detachably mounted on said spindle,
said spindle having a cylindrical hollow portion which is open to one end of the spindle, and a receiving surface provided in the periphery of an opening of said hollow portion and being directed in the same direction as a direction at which the hollow portion is open,
a gripper provided at a deep portion of the hollow portion in said spindle,
said gripper comprising a base secured to the spindle, two arms extended from the base towards the opening of the hollow portion and opposed with a center axis of the spindle sandwiched therebetween and locking elements projected from extremities of the arms towards said center axis,
said arms being opposed in spaced relation through a slight clearance with a peripheral wall surface of said hollow portion, said arms being resiliently flexible towards the peripheral wall surface of the hollow portion,
said locking elements respectively having locking surfaces directed towards the side of said base and inwardly inclined,
said installing and removing member comprising a tool mounting portion for mounting the tool,
an insert portion which can be inserted into said hollow portion,
an abutting surface in abutment with said receiving surface in the state wherein the insert portion is inserted into the hollow portion, and
a connecting body provided at the extremity of the insert portion,
said connecting body having a projected portion projected from the extremity of said insert portion and having a diameter so that said projected portion may pass through and between the locking elements in said gripper, and engaging bodies respectively projected from both sides of the extremity of said projected portion,
the distance between the extremities of said engaging bodies being larger than the distance between the extremities of the locking elements and smaller than the distance between inner surfaces of said arms,
said engaging bodies respectively having engaging surfaces directed at the side of said insert portion and outwardly inclined,
the distance from the receiving surface of said spindle to said locking surface being slightly larger than the distance from the abutting surface of said installing and removing member to said engaging surface so that the insert portion of said installing and removing member is inserted into the hollow portion of said spindle until said abutting surface abuts against said receiving surface whereby the extremity of the projected portion in the connecting body may pass through and between both the locking elements in the gripper, at which position the installing and removing member is rotated whereby the engaging body causes the locking element to be spread outwardly against the resiliency of said arms and the engaging surface comes into engagement with the locking surface,
said one end in the spindle and such a portion in the installing and removing member that is located near said one end of the spindle when the insert portion is received in the hollow portion of the spindle being provided with a pair of engaging portions which are adapted to prevent the relative rotation of the installing and removing member with respect to the spindle but other than the gripper in the deep portion of the hollow portion and the connecting body provided at the extremity of the insert portion,
and the relationship of the circumferential positions of respective engaging elements of said pair of engaging portions being determined in such a manner that the engaging elements engage with each other to prevent the rotation of the installing and removing member relative to the spindle when the installing and removing member is turned against the spindle until the engaging surface of the connecting body located at the extremity of the insert portion comes into engagement with the locking surface of the gripper located in the deep portion of the hollow portion.

4,585,381

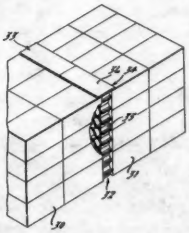
VOID FILLER

George C. Boyse, Rocklin, Calif., assignor to Down River International, Inc., Sacramento, Calif.

Filed Oct. 6, 1983, Ser. No. 539,621
Int. Cl.[4] B61D *45/00*; B32B *3/12*
U.S. Cl. 410—154 **21 Claims**

1. An expansible honeycomb-type element comprising a plurality of stacked strips of readily foldable material secured to each other at a plurality of spaced and staggered positions in an initially flat and compact relationship, whereby the stacked strips can be expanded to define a slab having a multiplicity of cells, including a supporting strip defining an end member of said stack, said supporting strip being secured at a plurality of positions to a next subjacent strip, and a suspension structure overlying and secured to said supporting strip at a plurality of positions spaced and offset from the positions at which the

supporting strip is secured to said subjacent strip, the portions of said supporting strip between said positions at which it is secured to the suspension structure and to the subjacent strip defining connection suspension walls, characterized by extensible portions forming a part of at least certain of said connecting



suspension walls, said extensible portions being extensible longitudinally of the strip, whereby the portions of the supporting strip which are not secured to the suspension structure are expansible away from the suspension structure to define cells between the supporting strip and the suspension structure.

4,585,382

EASILY REMOVABLE RIVET WITH TAB

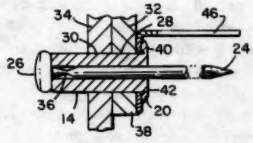
William D. Bryce, Jr., Seymour, Conn., assignor to USM Corporation, Farmington, Conn.

Filed Dec. 1, 1983, Ser. No. 556,987

The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.

Int. Cl.⁴ F16B *13/04*

U.S. Cl. 411—34 **5 Claims**



1. A blind rivet assembly adapted to be placed through an opening in a workpiece comprising:

a. a rivet having a hollow body portion and an interconnected flange normal to said body portion, said body portion having an uninterrupted outer surface merging into a localized area of weakness at said flange that extends into the surface of said flange;

b. a mandrel having a head and an elongated stem with a continuous uninterrupted outer surface, said mandrel being inserted into said rivet body portion with the mandrel stem extending beyond said flange;

c. said mandrel stem being adapted to be pulled to upset said rivet body portion so that said flange would rest against one surface of the workpiece and the upset rivet body portion against the opposite surface of the workpiece while the rivet body portion and said flange remain interconnected;

d. separate means adapted to be placed under said head portion and secured between said head portion and the workpiece which when removed will strip said flange portion from said body portion along said localized area of separation so that said body portion can be passed thorough the opening in the workpiece and the rivet removed from the workpiece.

4,585,383

BLIND RIVET

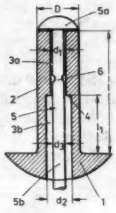
Ludwig Kraemer, Sudetenstrasse 23, D-8761 Mönchberg, Fed. Rep. of Germany

Continuation of Ser. No. 570,411, Jan. 12, 1984, abandoned, which is a continuation of Ser. No. 465,420, Feb. 10, 1983, abandoned, which is a continuation of Ser. No. 154,687, May 30, 1980, abandoned. This application Oct. 1, 1984, Ser. No. 657,035

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, ?923171; May 13, 1980, 3018286

Int. Cl.⁴ F16B *13/06*

U.S. Cl. 411—38 **17 Claims**



1. In a blind rivet assembly having a grip thickness within a range bounded by minimum and maximum thickness values for use in gripping at least two sheetlike layers, said rivet assembly including a blind rivet having a mandrel associated, therewith, the improvement comprising:

said blind rivet being an integral one-piece body having an elongated shank which is free at one end and is provided with an enlarged head at the other end, said shank at the free end thereof defining thereon an end surface, said shank having a smooth and substantially cylindrical outer surface of substantially uniform diameter throughout the axial extent thereof;

said mandrel having an elongated stem which projects through the rivet body and has an enlargement at one end thereof, said enlargement having a substantially flat bottom surface for abutting contact with said end surface of said shank, said enlargement having a maximum cross-sectional dimension which is defined by said bottom surface and is approximately equal to the diameter of said shank, and the bottom surface of said enlargement having an outer edge which directly contacts said end surface;

said shank having means associated therewith in the vicinity of the free end thereof for permitting deformation of the shank to create a substantially annular upset portion which at least partially surrounds said enlargement in response to said enlargement and said head being axially moved toward one another for effecting compression of said shank therebetween;

said shank also having means associated therewith which is positioned more closely adjacent said head for radially outwardly deforming said shank at a location intermediate the ends thereof to create a substantially annular radially outwardly projecting bead which is created adjacent the rearward side of the layers only when the grip thickness of the layers equals or slightly exceeds the minimum grip thickness, said last-mentioned means being incapable of forming said bead when the thickness of the layers is equal to or only slightly less than the maximum grip thickness;

said shank when in an initial nondeformed condition having a first substantially cylindrical bore formed coaxially over a substantial axial extend thereof, said first bore extending inwardly from the free end of said shank and having a smooth substantially cylindrical wall which is of substantially uniform diameter;

said shank having a second axially elongated bore formed therein and extending over a substantial axial extent thereof, said second elongated bore extending axially of said rivet body through the head and axially into and

partially through the shank for communication with said first bore, said second bore being of larger diameter than said first bore, said shank at the axial intersection between said first and second bores defining thereon an annular shoulder which surrounds said first bore and projects substantially radially outwardly therefrom, said shoulder facing axially toward said head and being at a location which is spaced axially from the underside of the head by a distance which is greater than said minimum grip thickness, whereby said first and second bores each extend over a substantial axial length of said rivet body with said first and second bores together extending over the complete axial length of said rivet body; and

said stem of said mandrel having an outer diameter over its length which closely equals the diameter of said first bore so that the stem can be freely axially moved into and through said first and second bores, said stem at a location which is disposed within said shank being provided with a reduced cross section to facilitate breaking of said stem in response to a substantially predetermined tension force being imposed on the stem during deformation of the rivet body.

4,585,384

MULTI-STAGE CONVEYOR SYSTEM

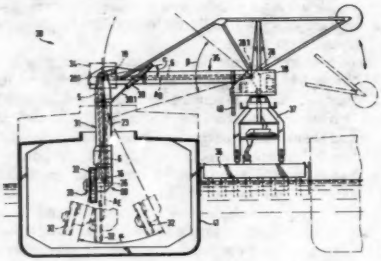
Herman Richard, Heusenstamm; Herman Unland, Hofheim, and Klaus Ostmann, Darmstadt, all of Fed. Rep. of Germany, assignors to Hartmann Fördertechnik GmbH, Offenbach, Fed. Rep. of Germany

Filed Dec. 28, 1984, Ser. No. 687,187

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1984, 3400437

Int. Cl.[4] **B65G** *15/16, 67/58*

U.S. Cl. 414—139 **12 Claims**



1. A multi-stage conveying system comprising

(A) a loading unit for receiving a material to be conveyed from a lower level place of delivery, such as a ship's hold or the like, to a higher level depositing facility,

(B) a steeply lifting elevator unit, to the lower end of which material is transferred from said loading unit,

(C) a depositing transom unit for taking up material from the upper end of said elevator unit and transferred to said depositing facility,

each of said units having a central longitudinal axis; wherein said elevator unit comprises

(1) an endless elevator belt having an outer elevator belt face and an inner elevator belt face, and

(2) a row of material-receiving receptacles, borne between said elevator belt faces, and adapted for being loaded with said material via said outer elevator belt face,

said endless elevator belt being adapted for moving through an inner ascending reach and an outer descending reach in said elevator unit; and through a terminal branch in said transom unit and joined at an angle to the upper ends of said ascending and descending reaches,

(a) an endless standard belt having an outer standard belt side and an inner standard belt side, and being adapted for moving through an inner ascending standard belt reach and an outer descending standard belt reach in said elevator unit, and through a delivery branch joined at an angle to the upper ends of said elevator belt reaches in said elevator unit,

said inner reach of said standard belt sealingly covering said outer elevator belt face of said inner ascending reach of said elevator belt in said elevator unit;

(b) angle-adjusting means associated with said elevator unit and said standard belt delivery branch in said transom unit and adapted for adjusting an angle between said central longitudinal axis of said elevator unit and of said delivery branch in said transom unit, said angle-adjusting means comprising a position-setting device having an adjustable transverse length and being articulatedly connected with each of said elevator unit and transom unit,

(c) a head station between the upper end of said elevator unit and the adjoining transom unit, and

(d) direction-changing swivel means in said head station between said elevator unit and said transom unit, said swivel means being adapted for carrying out a swivelling action of said terminal branch of said elevator belt relative to said elevator unit and having a swivel axis extending transversely relative to said central longitudinal axes of said elevator unit and said elevator belt terminal branch;

(e) means for operational drive of said elevator belt and said standard belt in the same sense in said inner ascending reaches thereof in said elevator unit and head station, and for synchronous speed thereof, at parallel positioning of said ascending reaches of said two belts,

the distance between said inner face and outer side, respectively, of said two belts in said ascending reaches in said elevator unit and head station thereof being such as to correspond to the height of said receptacles and thereby to cover said receptacles sealingly by said outer side of said standard belt;

said elevator belt moving about said direction-changing swivel means in said head station and through an adjoining part of said transom unit above said outer side of said endless standard belt in the upper reach thereof passing through said last-mentioned unit;

said standard belt outer side in said ascending reach thereof remaining in covering contact with said outer elevator belt face in said ascending reach thereof over the arc of a segment of said swivelling action of said direction changing swivel means and, in the remaining portion of said swivelling action, detaching itself from said elevator belt and continuing conveyance of said material toward said depositing facility; and

(f) said terminal elevator belt branch comprising belt-reversing means and extending from said head station into said transom unit, and adapted for having a lower reach thereof lifted upwardly off said upper reach of said standard belt delivery branch in said transom unit, thereby opening said receptacles for emptying the material therefrom onto said upper reach of said standard belt, and

(g) said direction-changing swivel means in said head station and said angle-adjusting means being adapted for a cooperation such that a lower reach of said terminal elevator belt branch is lifted off by a determined small opening angle from an upper reach of said standard belt delivery branch, thereby opening said receptacles of said elevator belt at their lower face for discharge of material therefrom on to said delivery branch.

4,585,385

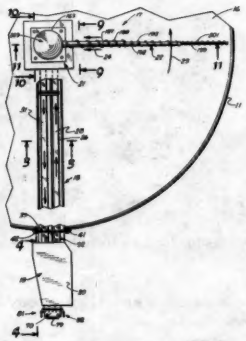
BOTTOM UNLOADER

Floyd E. Buschbom, Long Lake; Glen D. Hansen, and Donald L. Henke, both of Maple Plain, all of Minn., assignors to Veda, Inc., Long Lake, Minn.

Continuation of Ser. No. 344,522, Feb. 1, 1982, abandoned. This application Nov. 15, 1984, Ser. No. 671,804

Int. Cl.[4] B65G *65/46*

U.S. Cl. 414—311 50 Claims



1. An apparatus for removing material from a material storage area having a floor for accommodating the material comprising: a housing having a chamber locatable in the central portion of the material storage area, material conveying means extended from the housing to a location externally of the storage area, said conveying means having a movable conveyor operable to move material from the chamber to said location, first drive means to operate the conveyor, turntable means rotatably mounted on said housing, material collector means mounted on the turntable means, said collector means extended from the turntable means toward the outer portion of the storage area, said material collector means comprising an elongated auger means having helical flight means, non-rotatable support means mounting the auger means on the turntable means for rotation about its longitudinal axis, housing means located over the turntable means, said housing means having a side wall with an opening accommodating an inner portion of the auger means operable to restrict the amount of material moved into the chamber by the auger means, power transmitting means connecting said conveyor to said material collector means whereby said first drive means simultaneously operates said conveyor and material collector means, said power transmitting means being connected to said auger means whereby on operation of the movable conveyor the power transmitting means rotates said auger means, and second drive means operably connected to said turntable means to rotate the turntable means and move said auger means relative to said floor independently of the operation of the conveyor and rotation of the auger means whereby the auger means moves material toward said turntable means and meters the material through the opening in the housing means into the chamber and said conveyor moves the material from the chamber to said location externally of the storage area.

4,585,386

APPARATUS FOR TRANSPORTING AND CHANGING THE ORIENTATION OF CIGARETTES OR THE LIKE

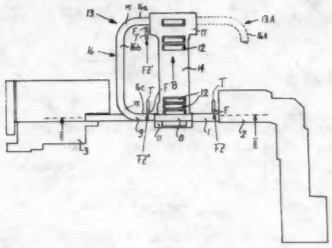
Rolf Gömann, Dassendorf, and Hans-Jochen Grasse, Wentorf, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 413,665, Sep. 1, 1982, abandoned. This application Sep. 4, 1985, Ser. No. 773,506

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1982, 3200886

Int. Cl.[4] A24C *5/35*

U.S. Cl. 414—403 49 Claims



1. Apparatus for manipulating rod-shaped articles which constitute or form part of smokers' products, comprising a first transporting unit arranged to advance a stream of articles in a predetermined direction and in a predetermined orientation and including at least one article diverting means and at least one junction; and a second transporting unit including a tray filler arranged to admit articles which are diverted by said diverting means into empty trays while said predetermined orientation of articles remains unchanged to thus convert such trays into filled trays, a tray evacuator arranged to remove articles from filled trays and to convert the removed articles into a second stream with attendant first change in orientation of articles, first conveying means arranged to deliver filled trays to said evacutor, and second conveying means arranged to deliver the second stream of said junction and including orientation changing means for further changing the orientation of diverted articles in addition to the change in orientation which is effected by said evacuator so that the combined change in orientation restores said predetermined orientation of diverted articles not later than in said junction, said orientation changing means including a portion extending in a substantially horizontal plane along an arc with reference to said first transporting unit.

46. Apparatus for manipulating rod-shaped articles which constitute or form part of smokers' product, comprising a tray filler arranged to admit articles into empty trays and to thus convert empty trays into filled trays; means for supplying to said tray filler a first stream of articles in a predetermined orientation; a tray evacuator arranged to remove articles from filled trays and to convert the removed articles into a second stream; and means for conveying filled trays from said tray filler to said tray evacuator including orientation changing means for changing the orientation of articles with the respective filled trays not later than upon delivery of filled trays to said tray evacuator.

4,585,387

ROBOT ARM

William Jayne, 804 Delores St., San Francisco, Calif. 94110

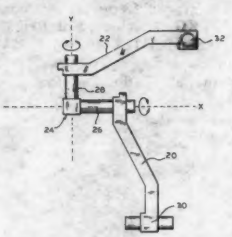
Filed Oct. 11, 1983, Ser. No. 540,791

Int. Cl.[4] B25J *17/00*

U.S. Cl. 414—730 12 Claims

1. A robot arm comprising at least two lever arms, each having a journal bearing in at least one end thereof, a joint part for interconnecting said two lever arms, said joint part com-

prising a generally L-shaped member forming a pair of rigidly interconnected axles mounted in the journal bearings of individually associated ones of said lever arms, and individually



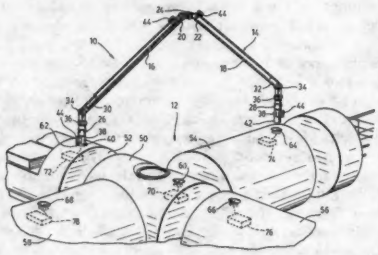
powered module means in each of said lever arms for turning the journal in said lever arm about the axle mounted in that journal, whereby said arms move about axes which are offset with respect to each other.

4,585,388

SELF-RELOCATING MANIPULATOR

Devendra M. Gossain, Downsview, and Savinder S. Sachdev, Richmond Hill, both of Canada, assignors to Spar Aerospace Limited, Mississauga, Canada

Filed May 8, 1984, Ser. No. 608,182
Int. Cl.[4] B25J *15/04*
U.S. Cl. 414—735 **14 Claims**



1. A self relocating manipulator arm which is movable so as to be secured to any one of a number of powered fixtures which are spaced from one another on a support structure, said manipulator arm comprising:

(a) a boom having first and second ends which are spaced from one another,

(b) first and second end effectors each adapted to releasably secured to any one of said powered fixtures,

(c) first and second articulator means mounting said first and second end effectors at said first and second ends of said boom respectively, said first and second articulating means providing a sufficient degree of movement between the end effectors and the boom to allow one end effector to be moved toward and away from one of said fixtures while the other end effector remains mounted on one of said powered fixtures, and

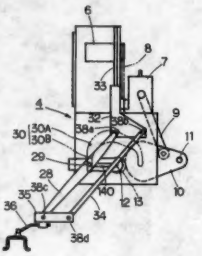
(d) power transmission means communicating with each articulator means and siad first and second end effectors for transmitting power through one of said first or second end effectors, when it is secured to one of said powered fixtures, to said first and second articulator means and to the other of said first and second end effectors for articulating the boom with respect to either end effector whereby the manipulator assembly may relocate itself by sequentially securing and releasing one of said end effectors and then the other of said end effectors with respect to said powered fixtures.

4,585,389

APPARATUS FOR LOADING OR UNLOADING A WORKPIECE

Masao Watanabe, Nagoya; Hideo Nagakura, Okazaki, and Taminori Yanagisawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jul. 11, 1984, Ser. No. 629,573
Claims priority, application Japan, Aug. 1, 1983, 58-140669
Int. Cl.[4] B23Q *7/04*
U.S. Cl. 414—752 **8 Claims**



1. An apparatus for loading or unloading a workpiece comprising:

a main body;

power sources provided on said main body for generating a rotary movement;

rotating means cooperatively connected with said power sources so as to be rotated in accordance with the rotary movement of said power sources and rotatably mounted on said main body, the rotating means comprising a cylinder device which slides in a longitudinal direction thereof, a pin means which is actuated by the sliding movement of a rod of said cylinder device, and a biasing means biasing said pin means toward one of two different positions;

cam means provided onto said main body, the cam means having a first cam surface for a work motion and a second cam surface for a return motion, said pin means contacting on one of the first and second cam surfaces with the force of said biasing means;

a workpiece holder for holding a workpiece;

carriage means mounting said workpiece holder thereon;

guide means fixed on said main body and extending in a vertical direction;

a sliding means sliding in a parallel direction with the guidance of said guide means;

a main arm whose upper portion is pivotally mounted on said sliding means and whose lower portion is pivotally mounted on said carriage means, said pin means pivotally fitting into an intermediate portion of said main arm to move the intermediate portion of said main arm; and

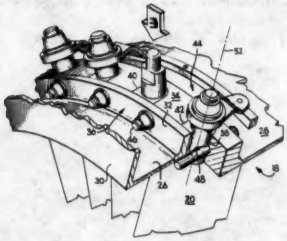
a sub-arm extending in a parallel relationship with said main arm, an upper portion of said sub-arm pivotally mounted on said sliding means, a lower portion of said sub-arm pivotally mounted on said carriage means, the combination of said main arm, said sliding means, said sub-arm and said carriage means constituting a parallel link structure, whereby when the power sources commence to generate a rotary movement, the rotating means rotates according to the rotary movement of the power sources while the pin means contacts on one of the first and second cam surfaces with the force of the biasing means, thereby obtaining a work motion and a return motion which is different from a work motion of a workpiece.

4,585,390

VANE RETAINING MEANS

George M. Pirtle, Loveland, and Ronald C. Acres, Hamilton, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 4, 1984, Ser. No. 616,625
Int. Cl.[4] F04D *29/56, 29/64*
U.S. Cl. 415—160 **2 Claims**



1. In a compressor including a casing with first and second annular members, and a plurality of vanes, each vane having a vane axis and a root end for mounting to said casing, a stator vane retaining means comprising:

a first flange extending radially outwardly from said first member;

a second flange extending radially outwardly from said second member, said second flange including a plurality of radially extending recesses;

wherein said flanges are adapted to mate so that said first flange encloses said recesses thereby forming a plurality of radially extending holes, each of said holes being adapted to receive one of said root ends; and

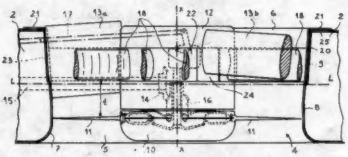
a fastening means for joining said flanges, comprising a plurality of bolts extending axially through said flanges and intersecting with a cut-out portion of each of said root ends, thereby providing radial retention of each of said vanes.

4,585,391

TAIL ROTOR ARRANGEMENT WITH INCREASED THRUST FOR ROTARY WING AIRCRAFT AND DEVICE FOR INCREASING THE THRUST OF SUCH AN ARRANGEMENT

Alain Vuillet, and Francoise J. Morelli, both of Aix-en-Provence, France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Sep. 27, 1983, Ser. No. 536,387
Claims priority, application France, Oct. 6, 1982, 82 16753
Int. Cl.[4] B64C *27/78;* **F04D** *29/44*
U.S. Cl. 415—210 **8 Claims**



1. A device for use as a tail rotor arrangement for rotary wing aircraft, comprising in combination: an aircraft; said aircraft having a tunnel of axis X—X transverse to said aircraft and in which is disposed a multi-blade rotor coaxial to said tunnel and generating a transverse air flow and, on the other hand, provided to recover in the form of axial thrust the energy of rotation of the air flow at the outlet of the rotor, wherein said device comprises a monolithic assembly of a pluraltiy of fixed blades, disposed inside said tunnel downstream of said rotor with respect to said air flow so that said blades are at least substantially radial with respect to said tunnel;

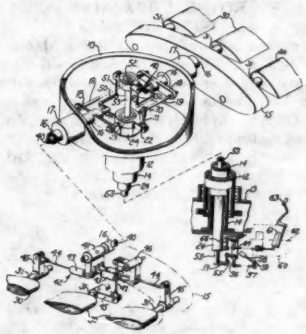
said plurality of fixed blades being arranged such that the distance separating the trailing edges of each of said plurality of rotating blades from the leading edges of each of said plurality of fixed blades is at least equal to once the length of the chord of the profile of said rotating blades.

4,585,392

BLADED ROTOR SYSTEM AND PITCH CONTROLS THEREFOR

Alfred Curci, 183 London Dr., Hamden, Conn. 06517

Filed Dec. 15, 1983, Ser. No. 561,926
Int. Cl.[4] B64C *27/74*
U.S. Cl. 416—114 **12 Claims**



1. In a rotor system for a helicopter, the combination of a power shaft, at least one pair of diametrically opposite frames carried by said shaft for rocking motion about a main axis diametrically of said shaft, sets of lift blades carried by said frames, respectively, for rocking about first axes substantially parallel to said main axis, a first manual member, an operating connection between said first member and said frames, and including a swashplate for rocking said frames in the same direction on operation of said first member, a second manual member, and another operating connection between said second member and said blades for rocking said blades in unison and said blade sets in opposite directions, respectively, on operating said second member.

4,585,393

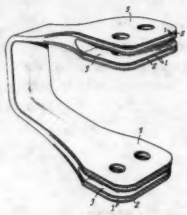
FIBER REINFORCED/EPOXY MATRIX COMPOSITE HELICOPTER ROTOR YOKE

Edward S. Hibyan, Trumbull; Thomas J. Toner, Milford, and Peter C. Ogle, Woodbridge, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 22, 1983, Ser. No. 477,701
Int. Cl.[4] B64C *27/38*
U.S. Cl. 416—134 A **1 Claim**

1. A helicopter hub yoke comprising a U-shaped fiber reinforced epoxy matrix composite containing unidirectionally oriented continuous glass fibers, oriented in the direction of principle stress along the length of the yoke, the yoke having clevis sections at either end, each clevis section containing

multiaxially oriented multiple plies of unidirectionally oriented continuous graphite fibers interleaved with the continuous



glass fibers so as to produce a crack resistant, damage tolerant, integrity inspectable yoke.

4,585,394

APPARATUS FOR ADJUSTING THE TRACKING OF THE BLADES IN A ROTOR, ESPECIALLY FOR A ROTARY WING AIRCRAFT

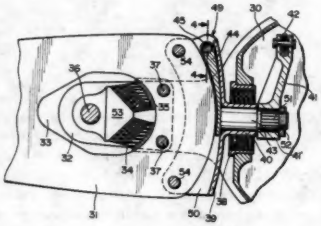
Alois Schwarz, Putzbrunn, and Karlheinz Mautz, Ottobrunn, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Division of Ser. No. 474,044, Mar. 10, 1983, Pat. No. 4,545,733. This application Feb. 25, 1985, Ser. No. 705,012

Claims priority, application European Pat. Off., Mar. 18, 1982, 82102202; Mar. 18, 1982, 82102203

Int. Cl.[4] B64C *27/48*

U.S. Cl. 416—138 **7 Claims**



1. An apparatus for adjusting the tracking of blades in a rotor, especially for a rotary wing aircraft, comprising rotor hub means (**30**), blade angle adjustment means, means for connecting a blade root (**31**) to the rotor hub means (**30**) and for taking up loads resulting from radially effective forces while simultaneously permitting a rotational adjustment about a radial axis of a blade, said connecting means comprising an aperture (**33**) in a blade root (**31**), a rotor arm (**32**) extending radially away from said rotor hub means (**30**) and having a bearing holding means (**35, 53**) reaching into said aperture, axial and radial elastomeric bearing means (**34**) operatively held by said bearing holding means in said aperture, said apparatus further comprising blade root mounting means (**39, 50**) having one end secured to a blade root and a sleeve end (**40**), radial elastomeric bearing means (**38**) operatively holding said sleeve end (**40**) in said rotor hub means (**30**) for permitting a blade angle adjustment, blade angle adjustment means including a shaft (**43**) extending rotatably through said sleeve end (**40**), a lever arm (**44**) rigidly connected to said shaft and reaching away from said shaft (**43**) for cooperation with said blade root mounting means, and tracking adjustment means (**45**) operatively interposed between said blade root mounting means and said lever arm (**44**) for adjusting the relative position between the lever arm and the blade root mounting means for permitting a tracking adjustment and for securing the lever arm (**44**) against further rotation relative to the respective blade root after adjustment.

4,585,395

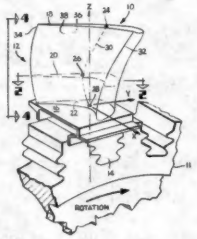
GAS TURBINE ENGINE BLADE

John G. Nourse, Topsfield; John J. Bourneuf, Boston, and David R. Abbott, Manchester, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Dec. 12, 1983, Ser. No. 560,656

Int. Cl.[4] F01D *5/14*

U.S. Cl. 416—223 A **27 Claims**



1. A blade for a gas turbine engine comprising an airfoil portion including a pressure side and a suction side joined at an edge, an intermediate section having an I_{min} axis, and a non-linear stacking axis having a first portion having a first slope and a second portion having a second slope, said second slope having a negative sense with respect to said first slope, and said stacking axis being positioned in said blade to obtain bending about said I_{min} axis for generating a compressive component of bending stress in said edge at said intermediate section due to centrifugal force acting on said blade.

4,585,396

TURBINE SHAFT

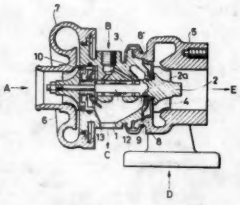
Mitsuyoshi Kawamura, and Noboru Ishida, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Nov. 30, 1983, Ser. No. 556,668

Claims priority, application Japan, Nov. 30, 1982, 57-179961[U]

Int. Cl.[4] F02B *17/00*; F16N *7/04*

U.S. Cl. 416—241 B **5 Claims**

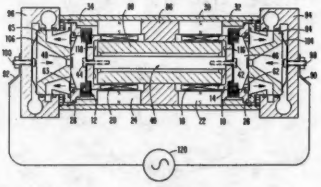


1. In a turbine having a ceramic rotor joined to a metal turbine shaft, the improvement wherein: a juncture between said rotor and said turbine shaft is disposed between a bearing supporting said turbine shaft and a sealing ring blocking fluid flow around said rotor from an oil reservoir of said turbine, and at a position where oil from said oil reservoir is circulated around said juncture.

4,585,397
DUAL BELLOWS PUMP WITH DRIVE CIRCUIT THROUGH BELLOWS

Roy P. Crawford, Saratoga, and Robert B. Watrous, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1985, Ser. No. 740,925
Int. Cl.[4] F04B *21/00, 43/00;* H02K *33/00*
U.S. Cl. 417—63 **16 Claims**



1. A pump comprising:

a pair of flexure elements, at least one of the flexure elements being electrically conductive;

means for supporting the flexure elements in spaced-apart relationship with their directions of flexure being generally collinear;

means for rigidly connecting the flexure elements together generally along their directions of flexure, whereby the spaced-apart flexure elements are capable of flexing in phase;

an electrically conductive coil secured to and electrically coupled with said at least one flexure element and movable therewith during flexure;

means located proximate the coil for generating a magnetic field generally perpendicular to the conductive paths in the coil;

a pair of end plates attached to respective flexure elements and defining fluid chambers therewith, the end plate attached to said at least one flexure element being electrically conductive and electrically coupled with said at least one flexure element, each end plate being rigidly secured to the supporting means for the flexure elements and thereby immovable during flexure; and

means for allowing the entry and exit of fluid into and out of each fluid chamber, whereby when an alternating current is supplied through said at least one end plate and attached flexure element to the coil, the coil and connected flexure elements flex in alternating directions in phase with the current and fluid is alternately drawn into and forced out of the fluid chambers.

4,585,398
COMBINATION FLUID TANK, AIR/FLUID COOLER AND PRIME MOVER/PUMP MOUNTING SYSTEM FOR A HYDRAULIC POWER UNIT

Maurice D. Drake, 3751 Woodman, Troy, Mich. 48084

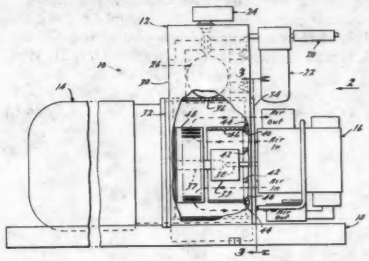
Filed Aug. 8, 1984, Ser. No. 638,947
Int. Cl.[4] F04B *39/06*
U.S. Cl. 417—367 **6 Claims**

1. A combination fluid tank, air/fluid cooler, and mounting system for a prime mover and a pump of a hydraulic power unit comprising

a tank having a pair of spaced, parallel, laterally aligned mounting plates on opposite walls thereof,

an imperforate reaction torque tube extending between the opposite walls of said tank in fluid sealed relationship to the interior thereof whereby fluid in said tank is in direct heat transfer contact with one surface of said tube, said tube being mechanically connected to said mounting plates in reaction torque transmitting relationship,

a prime mover mounted on one of said mounting plates and having a rotary output shaft extending internally of said reaction torque tube and toward the other of said mounting plates, and

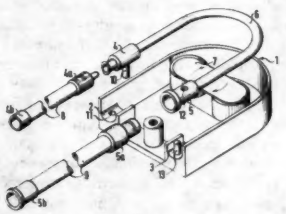


a pump mounted on the other of said mounting plates and having a rotary input shaft drivably connected to the output shaft of said prime mover.

4,585,399
HOSE PUMP

Manfred Baier, Bretten-Diedelsheim, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Jun. 12, 1985, Ser. No. 743,828
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 8418491[U]
Int. Cl.[4] F04B *43/12*
U.S. Cl. 417—477 **2 Claims**

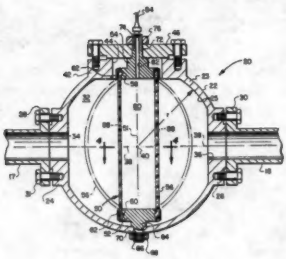


1. In a hose pump for drawing fluids from a body cavity, said pump having a hose having an inlet connector at one end for coupling to a suction hose and an outlet connector at the other end for coupling to a pressure hose, said inlet and outlet connectors being different to prevent inadvertent connection of the outlet connector with a hose other than the pressure hose, a housing for receiving the hose with the inlet connector being in an inlet seat and the outlet connector being in an outlet seat, and means for forcing a fluid through said hose inserted in said housing, the improvements comprising said housing and inlet and outlet connectors having cooperating means to prevent transposition of said inlet and outlet connectors in said housing, said means including one of said inlet and outlet seats having a bore for receiving a pin of the connector associated therewith, the other of said inlet and outlet seats having a pin for insertion in a bore in the connector associated therewith so that the connector associated with the one seat cannot be placed in the other seat.

4,585,400
APPARATUS FOR DAMPENING PUMP PRESSURE PULSATIONS

James D. Miller, P.O. Box 740095, Dallas, Tex. 75374

Continuation-in-part of Ser. No. 401,959, Jul. 26, 1982, Pat. No. 4,445,829, which is a continuation-in-part of Ser. No. 216,161, Dec. 15, 1980, abandoned. This application Mar. 21, 1984, Ser. No. 591,681
Int. Cl.[4] F04B *11/00*
U.S. Cl. 417—540 16 Claims



1. A pressure pulsation dampener for reducing hydraulic pressure pulsations in the discharge flow line of a positive displacement pump, comprising:

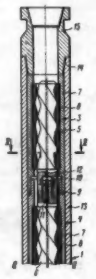
a generally spherical pressure vessel forming an enlarged volume chamber, said pressure vessel including an inlet port adapted to be connected to pump discharge conduit means and a discharge port adapted to be connected to a hydraulic flow line whereby said dampener is interposed in the pump discharge flow line, said pressure vessel having a volumetric capacity of at least 5% of the discharge liquid flow rate through the dampener wherein the units of volume of the capacity of said pressure vessel and liquid flow are the same and the unit of time is one minute, and

means containing a trapped volume of pressure gas comprising a gas charged flexible cartridge disposed in said pressure vessel, said cartridge comprising a flexible member forming an interior chamber having a gas volume of at least 5% of the liquid volume of said pressure vessel, said flexible member being formed of a fluid impervious elastomeric material which is stretchable under the urging of pressure gas in said interior chamber, said flexible member including means for limiting the stretching of said elastomeric material to provide a predetermined shape of said flexible member when stretched by said pressure gas in said interior chamber, said means for limiting said stretching comprising means for allowing said flexible member to assume a generally spherical shape when stretched under the urging of said pressure gas, including a plurality of flexible cords encapsulated in said elastomeric material, said cords being arranged to be relaxed between a relaxed condition of said flexible member and a predetermined stretched condition of said flexible member and to be tensioned under the urging of pressure gas acting on said elastomeric material at a predetermined stretched condition of said flexible member to limit the expansion of said flexible member under the urging of said pressure gas.

4,585,401
MULTISTAGE HELICAL DOWN-HOLE MACHINE WITH FRICTIONAL COUPLING OF WORKING ELEMENTS, AND METHOD THEREFOR

Dmitry F. Baldenko; Jury V. Vadetsky; Moisei T. Gusman, all of Moscow; Anatoly M. Kochnev; Samuil S. Nikomarov, both of Perm; Valery I. Semenets; Jury K. Tolsky, both of Moscow; Jury V. Zakharov, Perm, and Valerian P. Shumilov, Moscow, all of U.S.S.R., assignors to Veesojuzny Ordena Trudovogo Krasnogo Znameni Naucho-Issle, Moscow, U.S.S.R.

Filed Feb. 9, 1984, Ser. No. 578,625
Int. Cl.[4] F04C *2/00*; B23P *15/00*
U.S. Cl. 418—5 22 Claims



1. A multistage helical down-hole machine comprising:

a plurality of sections arranged in series axially, each of said sections comprising a helical stator formed of a metal housing having an elastic lining with shaped grooves secured to the inner surface of said housing, and a helical rotor having grooves adapted to meshingly engage with the grooved lining of said stator;

each of said stators having an axis aligned with the axis of said housing, and each of said engaged rotors having an axis non-aligned with the axis of said housing;

the stators of adjacent sections being rotatably movable relative to one another from an initial position where the respective axes of adjacent stators are non-aligned to a final position where the respective axis of said stators are aligned to form a common axis during jointing of said stators together;

the helical stator of each of said sections being rigidly connected directly to the helical stator of the next adjacent one of said sections to form a first set of succeedingly connected helical elements;

the helical rotor of each of said sections being rigidly connected directly to the helical rotor of the next adjacent one of said sections to form a second set of succeedingly connected helical elements, the respective axes of said jointed rotor elements being aligned to form a common axis;

said helical stators and rotors of said sections being arranged with a preselected eccentricity to define cavities of variable volume for the passage of fluid therethrough;

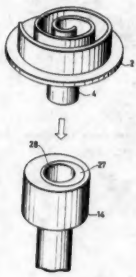
a shaft kinematically linked with the helical rotor of the last of said sections; and

the rigid connection of at least one of the sets of identical succeedingly connected helical elements of said sections being detachable through frictionally jointing a projection in the form of a body of revolution provided at the end of one of said elements and a recess of a corresponding shape provided at the end of said adjacent element forcibly secured against angular and axial displacements of said elements relative to one another.

4,585,402
SCROLL-TYPE FLUID MACHINE WITH ECCENTRIC RING DRIVE MECHANISM

Etsuo Morishita, Hyogo; Tsutomu Inaba, Wakayama; Toshiyuki Nakamura, Wakayama, and Tadashi Kimura, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1984, Ser. No. 592,206
Claims priority, application Japan, Mar. 22, 1983, 58-48183
Int. Cl.[4] F04C *18/04, 29/00*
U.S. Cl. 418—55 **12 Claims**



1. A scroll-type compressor comprising: a stationary involuted scroll member; an orbiting involuted scroll member interleaved with said stationary scroll member for compressing a volume of fluid taken in when said orbiting scroll member is orbited with respect to said stationary scroll member; an orbiting scroll shaft rigidly coupled to one end of said orbiting scroll member; and a crank mechanism and a bearing for supporting said crank mechanism comprising a crankshaft and an eccentric member operably associated with and rotatable with respect to said crankshaft, said orbiting scroll shaft operably associated with said eccentric member wherein, orbital movement of said orbiting scroll shaft is provided by said crankshaft through said eccentric member, a distance between a center of rotation of said crankshaft and a center of said orbiting scroll shaft being substantially equal to a radius of orbit when said center of rotation of said crankshaft, said center of said orbiting scroll shaft and a center of rotation of said eccentric member are arranged along a straight line in the stated order.

4,585,403
SCROLL DEVICE WITH ECCENTRICITY ADJUSTING BEARING

Tsutomu Inaba; Toshiyuki Nakamura, and Tadashi Kimura, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1984, Ser. No. 586,607
Int. Cl.[4] F01C *1/04, 21/04*
U.S. Cl. 418—55 **36 Claims**

1. A scroll type positive fluid displacement apparatus comprising:

(a) a stationary scroll member (1) having a spiral-shaped wrap;

(b) an orbiting scroll member (2) having a spiral-shaped wrap of the same shape as that of said spiral wrap of said stationary scroll member but having a rotated orientation;

(c) a compression pocket (5) formed by a space between the wraps of said stationary scroll member and said orbiting scroll member;

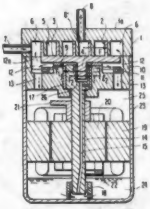
(d) a driving shaft (14) eccentrically connected with said orbiting scroll member (2) for causing said orbiting scroll member to orbit;

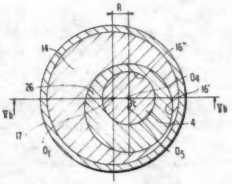
(e) an eccentricity adjusting bushing (26) interposed between said orbiting scroll member and said driving shaft (14) and rotatable with respect to both said orbiting scroll member and said driving shaft;

(f) a bearing (17) mounted within the region radially enclosing said eccentricity adjusting bushing (26), for radially supporting said driving shaft and a connected portion (4) of said orbiting scroll member (2) which is connected with said driving shaft (14);

(g) a supporting member (10) supporting said bearing; and

(h) rotation preventing means (11) for allowing orbital motion without rotation of said orbiting scroll member and said supporting member,





whereby eccentricity between a center O_1 of said driving shaft (14) and a center O_4 of said connected portion (4) of said orbiting scroll member (2) being automatically adjusted by said driving shaft (14), said eccentricity adjusting bushing (26), and said connected portion (4) according to the rotation of said driving shaft (14) to cause said wrap (201) of said orbiting scroll member (2) to meet with said wrap (101) of said stationary scroll member (1) enough to seal therebetween.

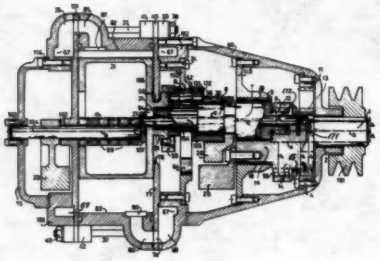
4,585,404
DOUBLE-ECCENTRIC ROTARY APPARATUS WITH MINIMAL CHAMBER VOLUME

José M. B. Barata, Barcelona, Spain, assignor to Nidra Holding S.A., Luxembourg, Luxembourg

Filed Apr. 17, 1985, Ser. No. 724,136
Claims priority, application Spain, Jul. 21, 1984, 534541
Int. Cl.[4] F01C *1/00, 17/06*
U.S. Cl. 418—61 R **16 Claims**

1. In a rotary fluid-handling apparatus including a substantially cylindrical housing, a rotor positioned within said cylindrical housing and supported for rotational and orbital movement relative thereto, the rotor including a cylinderlike drum having three blade-like vanes projecting radially outwardly therefrom for cooperative engagement with an interior annular wall defined by said cylindrical housing, and a rotatable crank mechanism interconnected to the drum for causing the central longitudinal axis of the drum to undergo an orbital motion relative to the cylindrical housing which describes a hypocycloidal path, the crank mechanism including a first crankshaft rotatable about a first axis which is aligned with the axis of the cylindrical housing, the first crankshaft having a first eccentric crank nonrotatably secured thereto for orbiting rotational movement about said first axis, said first crank defining a sec-

ond axis which is parallel to but eccentrically displaced from said first axis, said crank mechanism including a second crankshaft which is rotatably supported on said first crank for rotation about said second axis, said second crankshaft having a second eccentric crank nonrotatably secured thereto and defining a third axis which is parallel to but eccentrically displaced from both of said first and second axes, said drum being disposed with its central axis aligned with said third axis, the improvement comprising control means connecting between said drum and said housing for causing the hypocycloidal orbital path of the central axis to define the shape of a four-pointed star, said control means including three control pins



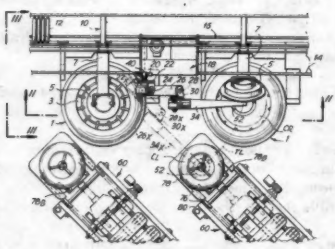
which are fixed relative to said drum and project axially, said control pins being disposed in spaced relationship so that they define the points of an equilateral triangle which has its center located on said central axis, and said control means also including four control forks which are fixed relative to the cylindrical housing and are uniformly angularly spaced around said first axis, each said control fork defining a slot which projects radially relative to said first axis and opens radially inwardly, each said slot being defined between a pair of opposed walls which guidingly cooperate with one of said pins during the orbital and rotational movement of the drum for guiding the radial movement of the pin outwardly and inwardly of the respective control fork.

4,585,405

APPARATUS FOR HANDLING TIRES TO AND FROM A VULCANIZING MACHINE

Floriano Capecchi, Pistoia, Italy, assignor to Cima Impianti S.p.A., Italy

Filed Feb. 27, 1985, Ser. No. 706,024
Claims priority, application Italy, Feb. 29, 1984, 9349 A/84
Int. Cl.[4] B29H *5/02*
U.S. Cl. 425—18 **6 Claims**



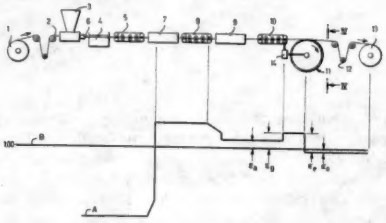
1. An apparatus for handling tires to be placed in vulcanizing machines and for removing tires from the vulcanizing machines, comprising in combination, a housing disposed adjacent the machines; a conveyor for moving tires mounted to said housing; guide rails mounted to said housing and extending past the machines; a carriage mounted for movement on said guide rails for reaching transfer positions which are each near one of the machines; an arm having one end connected to said carriage at an opposite free end, said arm having a plurality of articulated sections which are articulated to each other to establish a plurality of degrees of freedom for movement of said free end of said arm with respect to said carriage; and drawing means connected to said free end of said arm for engaging an upper rim of a tire lying in a horizontal drawing position, the vulcanizing machines having molds which are openable, said sections of said arm being articulated for transferring tires from an open mold to said conveyor and from the horizontal drawing positions to an open mold of a vulcanizing machine.

4,585,406

APPARATUS FOR PROVIDING A FIBRE WITH AN ADDITIONAL LENGTH IN SECONDARY MANTLING OF AN OPTICAL FIBRE

Jussi T. Ravela, Espoo, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed May 30, 1984, Ser. No. 615,314
Claims priority, application Finland, May 30, 1983, 831928
Int. Cl.[4] B29C *47/34, 55/22;* G02B *6/00*
U.S. Cl. 425—113 **1 Claim**



1. Apparatus for providing a single optical fiber with slightly greater length than a sheath extruded thereon, said apparatus comprising an extruder for extrusion of the sheath around the fiber, a coiling device for the sheathed fiber and a stretching device disposed between the extruder and the coiling device for stretching the sheath axially with respect to the fiber, the stretching device comprising:

a drive motor;

a stretch wheel for locking the fiber to the sheath and for moving the fiber toward the coiling device;

a belt drawing device driven by said drive motor at a constant predetermined speed, the belt drawing device being positioned between the extruder and the stretch wheel for moving the sheath toward the stretch wheel at a predetermined speed while permitting relative movement between the sheath and the fiber;

a planetary gear system comprising a ring gear connected to the belt drawing device, a planet gear carrier connected to the stretch wheel, and a small sun gear; and

a control motor driving the sun gear at a predetermined low speed such that the stretch wheel moves the sheathed fiber at a slightly higher speed than that at which the drawing device moves the sheath, the speed of the control motor being variable to enable variation of the speed at which the stretch wheel moves the sheathed fiber.

4,585,407

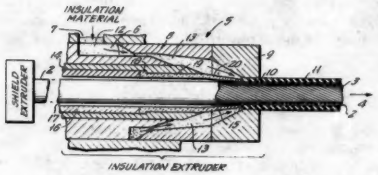
GUIDE FOR ELECTRIC CABLE INSULATION EXTRUSION HEAD

David A. Silver, Livingston, and John C. Rowland, Westfield, both of N.J., assignors to Pirelli Cable Corporation, Union, N.J.

Filed Oct. 3, 1983, Ser. No. 538,590
Int. Cl.[4] B29C *47/02, 47/04*
U.S. Cl. 425—114 **18 Claims**

1. An extrusion head for the extrusion of a plastic material around a conductor of an electric cable, said head having a body with a passageway therethrough for the passage of said

conductor through said body, said body having at least one channel therein extending from the exterior thereof to adjacent one end of said passageway for supplying said plastic material around said conductor, and a separate tubular guide body disposed in said passageway, having an open inner tubular bore portion for the passage of said conductor through said tubular



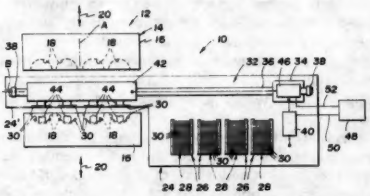
guide body and said tubular guide having an external portion extending across part of said channel for contacting said plastic material exiting from said channel, said guide body comprising a ceramic tube with a smooth inner surface of ceramic forming said bore portion of said guide body and the ceramic of said guide body having a thermal conductivity at 100° C. of less than 0.1 cal/(sec.cm.° C.)

4,585,408

IN-MOLD LABEL DISPENSER FOR PLASTIC BLOW MOLDING MACHINE

Richard C. Darr, Seville, Ohio, assignor to Plastipak Packaging, Inc., Plymouth, Mich.

Filed Apr. 11, 1985, Ser. No. 722,317
Int. Cl.[4] B29C *5/06, 27/04, 17/07;* **B65H** *3/08*
U.S. Cl. 425—171 **18 Claims**



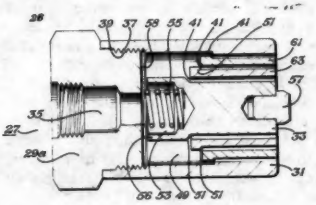
1. An in-mold label dispenser for a plastic blow molding machine including a mold having a pair of mold sections each of which includes a cavity section, and said mold sections being movable toward and away from each other between an open position spaced from each other and a closed position where the cavity sections thereof cooperate to define an enclosed cavity in which blow molding is performed, the in-mold label dispenser comprising: a base; at least one label magazine mounted on the base adjacent the mold; a label transfer mechanism including a subbase movably mounted on the base; a first actuator that extends between the base and the subbase to move the subbase between an aligned position with respect to the open mold sections and a transfer position; a shuttle mounted for movement with the subbase under the impetus of the first actuator and for movement with respect thereto toward and away from the mold; at least one label carrier mounted on the shuttle in a fixed relationship with respect thereto and being operable to carry a label for transfer from the label magazine to the mold; a second actuator mounted for movement on the subbase and being connected to the shuttle to move the shuttle between withdrawn and inserted positions with respect to the mold; said shuttle with the label carrier fixed thereon being located adjacent the label magazine in the withdrawn position where operation of the first actuator moves the subbase and the shuttle with the label carrier fixed thereto between the mold aligned and transfer positions to permit the label carrier to receive a label from the label magazine; the second actuator then moving the shuttle to the inserted position with the subbase in the aligned position to position the label carrier fixed on the shuttle and the label carried by the label carrier between the mold sections of the open mold; the first actuator thereafter moving the subbase and the shuttle thereon with the label carrier fixed to the shuttle to the transfer position to transfer the label on the label carrier of the shuttle to one of the mold sections prior to movement of the subbase and the shuttle thereon with the label carrier fixed to the shuttle back to the aligned position under the impetus of the first actuator which is followed by movement of the shuttle and the label carrier fixed thereon back to the withdrawn position in preparation for the next cycle; and a control for coordinating the operation of the first and second actuators to transfer at least one label from the label magazine to the mold during each blow molding cycle of the machine.

4,585,409

SPRING LOADED HEATING TORCH TIP

David A. Pryor, Denton, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed Aug. 27, 1984, Ser. No. 644,226
Int. Cl.[4] F23D *14/82*
U.S. Cl. 431—346 **10 Claims**



1. In a heating torch in which a fuel and oxygen admixture is fed to a tip and burned at high temperature exteriorly of the torch tip for heating a work piece or the like and including:

a. a fuel passageway and valve for supplying a controlled flow of fuel;

b. an oxygen passageway and valve for supplying a controlled flow of oxygen;

c. a mixer for mixing said fuel and oxygen; said mixer being connected in fluid communication with both said fuel and oxygen passageways and valves and having a discharge end;

d. a tip for evenly flowing said fuel and oxygen exteriorly thereof for burning adjacent said workpiece for the heating thereof;

the improvement comprising having said tip in the form of a multiple piece unit comprising:

e. an end piece having at one end a centrally disposed aperture and passageway; said aperture and passageway having a section adapted to matingly and sealingly engage said discharge end of said mixer; said end piece having at its other end a shell attaching means for attaching a shell;

f. said shell having an end piece attaching means for sealingly connecting with said shell attaching means of said end piece and having an internal stop means for holding at least one tip internal interiorly thereof;

g. at least one tip internal disposed interiorly of said shell; said tip internal having an external stop means for keeping said tip internal interiorly of said shell responsive to said internal stop means of said shell and having a receiving means for receiving a biasing means for biasing said tip internal toward said internal stop means of said shell;

h. a stub disposed in said at least one tip internal and

i. said biasing means being disposed so as to bias said tip internal toward said internal stop means of said shell such that said at least one tip internal can be easily and readily

assembled interiorly of said shell and said biasing means emplaced and said biasing means will allow hitting said stub against said work piece without flashback burning.

4,585,410

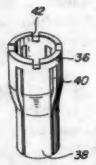
TORCH TIP SAVER

David S. Baker, 12 Drysdale St., Staten Island, N.Y. 10314, and Richard L. Miller, Dix Hills, N.Y., assignors to David S. Baker, Staten Island, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,333

Int. Cl.[4] F23D *14/46*

U.S. Cl. 431—350 **2 Claims**



1. A torch tip saver for the nozzle of a torch, comprising a large cylindrical portion for protecting a torch tip and a smaller cylindrical portion for attaching to the torch tip, said larger and smaller cylindrical portions being connected by a frusto-conical portion, a plurality of circumferentially spaced notches in said large cylindrical portion said frusto-conical portion and said smaller cylindrical portion, each notch extending completely through the smaller cylindrical portion, the frusto-conical portion and through the large cylindrical portion to a location spaced inwardly from an end of the large cylindrical portion, each notch being relatively narrow in width in the smaller cylindrical portion and expanding in width through the frusto-conical portion to a relatively wide width in the large cylindrical portion.

4,585,411

METHOD AND WALKING BEAM FURNACE FOR THE INTERMEDIATE HEATING OF PIPES IN HOT ROLLING MILLS

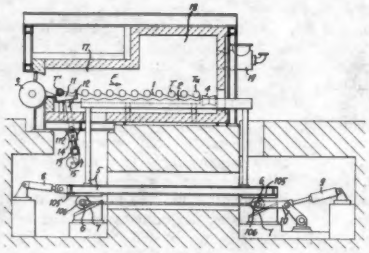
Giorgio Bocci; Sando Brizielli; Agostino Triuzzi, and Stefano Deplano, all of Genoa, Italy, assignors to ITALIMPIANTI Societa Italiana Impianti p.a., Genoa, Italy

Filed Jun. 29, 1984, Ser. No. 627,003

Claims priority, application Italy, Jul. 6, 1983, 12565 A/83; May 18, 1984, 12519 A/84

Int. Cl.[4] F27D *3/00*; F27B *9/14*; B65G *25/00, 37/00*

U.S. Cl. 432—11 **15 Claims**



8. A method for intermediate heating of pipes in a hot rolling mill by means of a walking beam furnace, located between the rolling mill and a sizing mill and having a forehearth zone without burners, a heat zone with burners, a charging end and a discharging end, by carrying the pipes stepwise from the charging end to the discharging end of the furnace through the forehearth zone and the heat zone, comprising the steps of:

(a) maintaining a temperature from about 800° to 850° C. in the forehearth zone,

(b) introducing the pipes in the foreheath zone at different respective temperatures ranging from 700° to 1000° C.,

(c) maintaining the pipes in the forehearth zone until they all reach a substantially same temperature of about 850° C.,

(d) heating the pipes in the heat zone to a discharge temperature of from about 920° to 980° C.

4,585,412

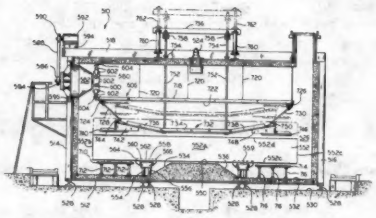
INGOT PUSHER FURNACE

Robert H. Ross, Meadville, Pa., assignor to Seco/Warwick Corporation, Meadville, Pa.

Continuation-in-part of Ser. No. 585,324, Mar. 1, 1984, Pat. No. 4,540,363. This application Aug. 29, 1985, Ser. No. 770,438

Int. Cl.[4] F27B *9/00*; F27D *3/04*

U.S. Cl. 432—148 **14 Claims**



1. An ingot pusher furnace for heating an ingot comprising:

an enclosure having a base, a plurality of vertical side walls connected to said base and a top wall;

means for heating said enclosure by heating a gaseous medium therein;

means for moving said gaseous medium within said enclosure;

a horizontal baffle assembly suspended from a frame member located above said top wall, said baffle assembly including a center portion and a pair of first and second upwardly sloping end portions connected to said center portion, said center portion being positioned substantially parallel to an upper surface of a center portion of the ingot;

a first upper horizontal baffle connected by a first gusset to the first sloping end portion, said first upper baffle being positioned substantially parallel to and above a first end portion of the ingot;

a second upper horizontal baffle connected by a second gusset to the second sloping end portion, said second upper baffle being positioned substantially parallel to and above a second end portion of the ingot; and

whereby when the gaseous medium is forced between the upper surface of the ingot and the horizontal baffles its velocity is increased from the end of the ingot to the center of the ingot so as to provide uniform heat transfer throughout the ingot.

4,585,413

ORTHODONTIC DEVICE

Arthur L. Wool, 1402 Penn Ave., Wyomissing, Pa. 19610

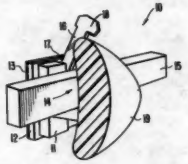
Filed Dec. 31, 1984, Ser. No. 687,727

Int. Cl.[4] A61C *3/00*

U.S. Cl. 433—8 **23 Claims**

1. An orthodontic bracket for use with lightwire or rectangular or square arch wire, comprising a mounting means adapted to be securely fastened to a patient's tooth, slot means provided on the bracket for receiving said lightwire or arch wire in an occlusal or gingival direction and a facade means

fixedly associated with the mounting means for covering the mounting means as well as lightwire or arch wire in the bracket used in treatment of a patient's teeth so that only said



facade means of said device is visible from the front, wherein said facade means is formed to be an integral, non-removable part of said bracket.

4,585,414

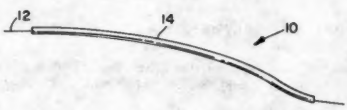
ORTHODONTIC ARCH WIRE

William J. Kottemann, 755 Tonkawa Rd., Long Lake, Minn. 55356

Continuation-in-part of Ser. No. 501,482, Jun. 6, 1983, abandoned. This application Jan. 22, 1985, Ser. No. 693,381

Int. Cl.[4] A61C *3/00*

U.S. Cl. 433—20 **10 Claims**



1. In an orthodontic system for imparting corrective forces to teeth which includes appliances mounted on the teeth and an arch wire connected to said appliances, the improvement being in the arch wire which comprises a plastic body of a cross section fitting and coacting with the appliances to apply forces thereto, and a reinforcing metal core disposed centrally within said body, the cross sectional area of the core being less than one half of the total cross sectional area of said arch wire, whereby the force capability of said arch wire is substantially less than that of a metal arch wire of the same total cross sectional area.

4,585,415

MOUTH AND TOOTH SPRAY APPARATUS

Edgar Hommann, Grossaffoltern, Switzerland, assignor to Gimelli & Co. AG, Switzerland

Filed Apr. 9, 1984, Ser. No. 597,840

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1983, 3312451

Int. Cl.[4] A61C *17/02*

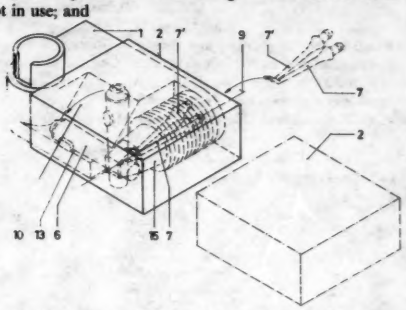
U.S. Cl. 433—80 **7 Claims**

1. A mouth and tooth spray apparatus comprising:

(A) an elongated base;

(B) a handle for holding a nozzle to spray fluid therefrom;

(C) mounting means for holding said handle when not in use, said mounting means being mounted at one end of said base and rotatable about an axis parallel to said end between a first position where said handle is disposed essentially vertically when ready for use and a second position where said handle is disposed essentially horizontally to lie in a free space on said base along one side thereof when not in use; and



(D) a fluid container adapted to be mounted on said base to supply fluid to said handle and, when empty, to be placed over said base as a cover.

4,585,416

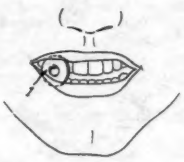
DEVICE FOR CLEANING TEETH AND MASSAGING GUMS

Richard G. DeNiro, 1118 E. Adams, Orange, Calif. 92667; Thomas M. Raines, 1727 Willowwood, Apt. C, Anaheim, Calif. 92806; Donald B. Raines, 737 Tennyson Ave., Placentia, Calif. 92670, and Joseph B. Raines, 16651 Huggins Ave., Yorba Linda, Calif. 92686

Filed Apr. 19, 1984, Ser. No. 602,137

Int. Cl.[4] A61C *5/00*

U.S. Cl. 433—140 **16 Claims**



1. A device for simultaneously cleaning teeth and massaging gums, comprising:

a spool-shaped member formed as a single piece of resilient, non-toxic material, said member comprising:

a central body portion including a central void, said central body portion having a substantially circular outer circumference to facilitate rolling said central body portion between the teeth from tooth to tooth; and

first and second substantially circular dish-shaped flange portions extending radially outward from opposite ends of said central body portion, said first flange portion having a concave surface facing said central body portion to generally conform to the labial surfaces of a user's teeth, said second flange portion having a convex surface facing said central body portion to generally conform to the lingual surfaces of a user's teeth;

said central void of said body portion facilitating collapse of said central body portion which induces a closure of said flanges against the teeth and gums of a user so that said inner surfaces of said flanges contact the surfaces of the teeth and gums to thereby clean the surfaces of the teeth and gums by rubbing on said surfaces.

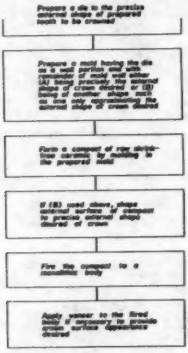
4,585,417
DENTAL APPLIANCE AND METHOD OF MANUFACTURE

Ralph B. Sozio, Boston, and Edwin J. Riley, Milton, both of Mass., assignors to Coors Porcelain Company, Golden, Colo.

Continuation of Ser. No. 378,969, May 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 103,647, Dec. 14, 1979, abandoned. This application May 21, 1984, Ser. No. 612,436

Int. Cl.[4] **A61C** *5/08, 13/083;* **B29C** *33/52*

U.S. Cl. 433—202.1 **13 Claims**



1. A method for making a custom fitted ceramic dental appliance, such as a tooth crown or bridge, to be secured to a prepared tooth, said method consisting essentially of preparing a die which is substantially a replica of the prepared tooth; molded against said die a body of raw particulate ceramic and forming said raw particulate ceramic into a compact having as an undersurface a recess substantially identical in size and shape to said die; and thereafter firing said compact to a dense monolithic body; said ceramic being of a formulation which undergoes no shrinkage during firing such that the fired body is substantially identical in size and shape to said compact prior to firing whereby said fired body fits substantially perfectly onto the prepared tooth.

3. A dental appliance made by the method set forth in claim **1** or **2**.

4,585,418
METHOD FOR SIMULATION OF A VISUAL FIELD OF VIEW

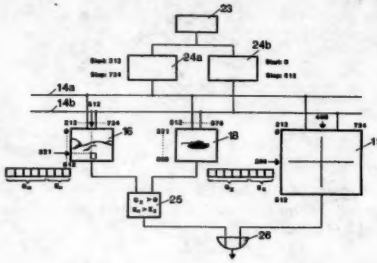
Robert Stickel, Neu Isenburg, Fed. Rep. of Germany, assignor to Honeywell GmbH, Offenbach, Fed. Rep. of Germany

Continuation of Ser. No. 443,092, Nov. 19, 1982, abandoned. This application Jan. 24, 1985, Ser. No. 694,892

Int. Cl.[4] **G09B** *9/00*

U.S. Cl. 434—20 **6 Claims**

1. Method for simulation of a visual field of view for training of a battle situation, so that the image of a background is displayed on a TV monitor in the field of view of the optics of a person to be trained and the image of a movable target is cut-in in that background, and so that the image of the background as well as the image of the target are digitally stored and are displayed after conversion into a video signal, characterized in that individual objects in the background image are provided with a digital range information and that image point by image point the range information with respect to the individual objects is compared with a digital range information of the target in order to determine image point by image point whether the target is covered by the individual object or is to display in front of that individual object, and further characterized in that the range information with respect to the individual object is produced by controlling the coordinates and thereby moving the target in the neighborhood of the respective individual object and that by scaling of the target with respect to the background image a realistic relationship between the target and the background image is produced so that, with a known cut out of the optics field of view and with a known size



of the target, the range may be assigned to the individual object and further characterized in that by unblanking of an image point on the contour of the individual object with the unblanked image point, the same range information is assigned to all image points within the individual object.

4,585,419
DIDACTIC AID FOR THE TEACHING OF ANY NUMBER SYSTEM

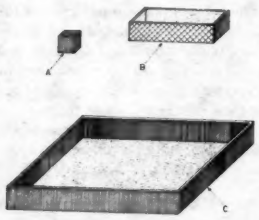
Maria P. S. Rinaldelli, San Severino Marche (MC), Via, Monte Cucco, 1, Italy

Filed Nov. 20, 1984, Ser. No. 673,406

Claims priority, application Italy, Nov. 25, 1983, 19441 B/83[U]

Int. Cl.[4] **G09B** *19/02*

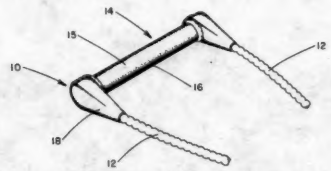
U.S. Cl. 434—189 **2 Claims**



1. In a didactic aid for the teaching of any (N) based number system of the type having a series of sets of container means, each such set of container means being associated with a respective numerical order and each being provided to hold a number (N) of other sets of container means associated with lesser numerical orders, wherein the improvement comprises means including a series of frames, each respective frame being color coded to a particular set of container means and each of said color coded frames being arranged side by side, whereby the last frame on the right is of the same color as container means representing the unit of the first order, the penultimate frame is of the same color as the container means representing the unit of the second order and so on, the last frame on the left being of the same color as the container means representing the unit of the highest order, and further including selected numerical figures adapted to be substantially fitted within a respective frame, whereby the numerical figure corresponding to the number of color coded container means counted of a particular numerical order may be selected and placed within the frame

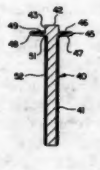
whose color corresponds to the color of the particular series of container means being counted.

4,585,420
MOLDED RUBBER SKI ROPE HANDLE WITH CONTINUOUS CLOSED FINGER PROTECTOR
James H. Taylor, 601 Second Ave., Red Springs, N.C. 28377
Filed Sep. 24, 1984, Ser. No. 653,303
Int. Cl.[4] A63C *15/06*
U.S. Cl. 441—69 **2 Claims**



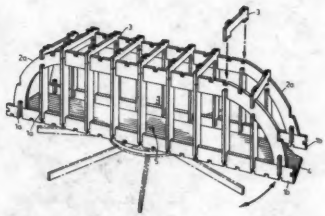
1. A ski rope handle and rope assembly wherein the ski rope is coupled to each end of said handle through an offset loop configuration, said ski rope handle and rope assembly comprising: an elongated ski rope handle having an elongated axis, a hollow metal core and a molded rubber surface covering formed about and enclosing said core; a finger protection sleeve formed about each end of said ski rope handle and extending forwardly therefrom, each said finger protection sleeve including a rope opening that extends therethrough at an angle normal to the elongated axis of said ski rope handle; a pair of first rope channels extending circumferentially around said ski rope handle adjacent respective finger protector sleeves; a pair of second ski rope channels formed in the rear of said finger protector sleeves and extending between in a plane generally parallel to said elongated axis and interconnecting said first rope channels and said rope openings; a pair of rope segments that extend to and couple with opposite ends of said handle through an external loop configuration, each external loop configuration including a single rope loop wound around said handle within said respective first rope channels in a continuous arcuate fashion so that said rope loop is centrally open about said ski rope handle and an intermediate rope segment extending laterally through said second rope channel from said rope loop and then forwardly through said rope opening formed in said finger protector sleeve; and wherein each said rope segment includes an end portion which merges with said intermediate rope segment just prior to extending laterally into said second rope channel so as to form said rope loop.

4,585,421
METHOD OF MAKING COPPER-CLAD BIMETAL ELECTRODES FOR SPARK PLUGS
George T. Payne, Tiffin, Ohio, assignor to The National Machinery Company, Tiffin, Ohio
Filed Nov. 23, 1983, Ser. No. 554,561
Int. Cl.[4] H01J *21/02*
U.S. Cl. 445—7 **15 Claims**



1. A method of making a bimetal electrode for a spark plug comprising preparing a cut length of wire having a circular cross-section with a core selected from one metal and a substantially uniform outer layer of a second metal and wherein said core and outer layer have a substantially uniform cross-section throughout said length of wire with the core being exposed at both its ends, axially compressing said wire to form a radially enlarged head on one end of said wire to a degree such that the core at said head is radially expanded to a diameter at least as great as the outside diameter of essentially unexpanded portions of said wire, trimming the radially projecting part of said head with an axial shear force to leave a blank of uniform diameter with a portion of said headed one end consisting essentially entirely of said one metal the core being formed of a metal which is relatively heat resisting and the outer layer is formed of a metal which is relatively highly thermally conductive.

4,585,422
TOY CONSTRUCTION KIT
Albert E. Kay, 79 Orton Park Road, Scarborough, Ontario M1G 3G7, Canada
Filed Aug. 17, 1984, Ser. No. 641,771
Int. Cl.[4] A63H *33/08*
U.S. Cl. 446—106 **1 Claim**



1. Toy construction kit, comprising:
(a) a plurality of linear members having ends with notches therein, and having edges with a plurality of notches therein in parallel planes spaced apart at equal intervals or multiples thereof, and
(b) a curved member having parallel edges with a plurality of notches therein in parallel planes spaced apart at said equal intervals or multiples thereof, and having ends with notches therein parallel to its edge notches and spaced apart at said equal intervals or multiples thereof, wherein all of said notches are capable of receiving, in cross-wise mating, a notch of another member, whereby different structures can be constructed of some of the linear members and the curved member.

4,585,423
TOY VEHICLE
Cheng L. Kwan, Kowloon, Hong Kong, assignor to Hang Tjuk Industrial Co. Ltd., Kowloon, Hong Kong
Filed Apr. 11, 1984, Ser. No. 599,745
Claims priority, application United Kingdom, May 4, 1983, 8312145
Int. Cl.[4] A63H *27/00*
U.S. Cl. 446—230 **5 Claims**

1. A toy vehicle, which comprises:
(a) a body,
(b) means for contacting a surface, said contacting means defining a first plane which, in use of the toy vehicle on a planar surface, contains said planar surface,
(c) a wheel axle which extends rotatably through said body and is pivotally movable with respect to said body in a second plane which intersects, but is not perpendicular to, said first plane,

(d) an electric motor having a drive shaft,

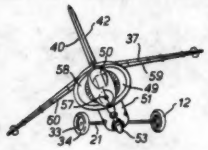
(e) means for transmitting rotation of said electric motor to said body and to said wheel axle, said transmitting means comprising:

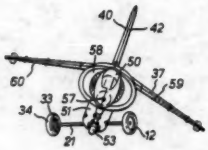
a first pinion fixed for rotation with said drive shaft;

a rotatably mounted crown gear having a driven and a driving wheel;

a second pinion fixed for rotation with said wheel axle; and

first, second and third gears each having a respective driven wheel and a respective driving wheel, said first pinion meshing with said first gear driving wheel, said first and second gear driven wheels meshing with said second and third gear driving wheels, respectively, and said third gear driven wheel meshing with said crown gear driving wheel, said crown gear driven wheel meshing with said wheel axle pinion for rotating said wheel axle, and





(f) means for periodically changing the direction of rotation of said body with respect to said wheel axle, said direction changing means comprising:

a worm gear having first and second ends and having a driving wheel fixed thereto at said first end;

a fourth gear having a driven and a driving wheel, said third gear driven wheel meshing with said fourth gear driving wheel and said fourth gear driven wheel meshing with said worm gear driving wheel;

a crank having a driving wheel, said crank driving wheel meshing with said worm gear; and

a guide member engaging said crank and being secured with respect to said wheel axle for effecting limited rotation of said wheel axle holder in alternating directions, whereby, in use of the toy vehicle on a planar surface, pivotal movement of said body with respect to said wheel axle and rotation of said wheel axle is effected so that the toy vehicle turns and tilts alternately to the left and to the right.

4,585,424

BASHFUL BEAR

Robert DeMars, 7932 Maestro Ave., Canoga Park, Calif. 91304

Filed Jun. 3, 1985, Ser. No. 740,343

Int. Cl.[4] A63H *3/00*

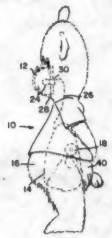
U.S. Cl. 446—295 **8 Claims**

1. A toy doll provided with means conveying a bashful demeanor and capable of exhibiting a variable blushing response, said means comprising:

(a) red-tinted light-transmitting face plate means defining cheek portions of said doll;

(b) an illumination means interior said doll and associated with said face plate means, said illumination means comprising two lamps, each associated with one cheek of said toy doll;

(c) a power source for activating said illumination means; and



(d) means for varying the power supplied to said illumination means as a function of the extent to which a portion of said toy doll is squeezed, said power varying means comprising a variable resistor mechanically coupled to said portion of said doll.

4,585,425

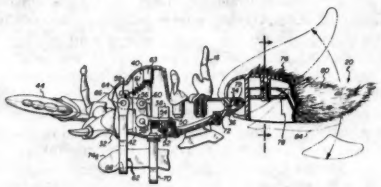
GLOVE PUPPET ASSEMBLY WITH FINGER ACTUATED CLAWS

Francis R. Amici, Northford; Hans S. Berger, Plainville, and John P. McNett, Farmington, all of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.

Filed Feb. 21, 1985, Ser. No. 703,692

Int. Cl.[4] A63H *3/14*

U.S. Cl. 446—327 **20 Claims**



1. In a simulated creature with movable claws or the like, the combination comprising:

A. a body member having top and bottom elements defining a cavity therewithin;

B. a pair of claw members extending outwardly and forwardly of said body member and having lever portions extending inwardly of said body cavity;

C. a bell crank assembly in said cavity including a bell crank having a generally vertical leg and a generally horizontal, forwardly extending leg at the upper end of said vertical leg, a bell crank follower having its forward end pivotably connected to the lower end of said vertical leg of said bell crank for pivotal movement relative thereto about a transverse axis, crank pivot means pivotably mounting the juncture of said legs of said bell crank on said body for pivotal movement relative thereto about an axis extending transversely of said body member, said bell crank follower having its rearward end pivotably connected to the inner ends of said lever portions of said claw members for relative pivotal movement about a vertical axis;

D. lever pivot means pivotably mounting said lever portions on said body at points spaced transversely from said pivotal connection to said bell crank follower for pivotal movement about parallel vertical axes; and

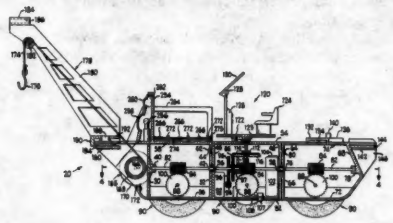
E. actuator means having one end extending outwardly of said body and its other end pivotally connected to the forward end of the horizontal leg of said bell crank, whereby movement of said actuator means downwardly will pivot the horizontal leg of said bell crank downwardly about said crank pivot means from a first position to a second position and cause said bell crank follower to drive the inner ends of said lever portions of said claw members rearwardly and thereby cause the claw members to pivot about said lever pivot means to move the outer ends of said claw members towards each other.

4,585,426

MOBILE PLAYSET

Russell G. Rasmussen, Skokie; Eugene Jaworski, Park Ridge, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 10, 1984, Ser. No. 579,143
Int. Cl.[4] A63H *17/06, 17/26, 13/00*
U.S. Cl. 446—428 **18 Claims**



1. A toy motor driven mobile playset comprising:
a single motor powering an elongated shaft;
motor driven surface engaging wheel and axle assemblies in engagement with the elongated shaft;
a chassis supported above the wheel and axle assemblies;
the chassis comprising articulated sections;
each of the articulated sections having a driven wheel and axle assembly;
each of the sections being permitted to swivel about the axis of the elongated shaft;
an essentially flat deck on the chassis; and
means on the deck for removably mounting accessories.

4,585,427

LONG TRAVEL SERIES DAMPER FOR CONTINUOUSLY VARIABLE TRANSMISSION

Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Automotive, Inc., Troy, Mich.

Filed Mar. 26, 1985, Ser. No. 716,068
Int. Cl.[4] F16D *3/14*
U.S. Cl. 464—67 **21 Claims**

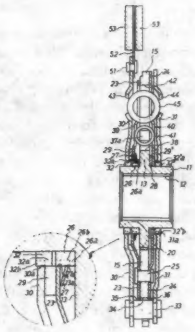
1. A low friction, dry environment vibration damper assembly to transmit torque between driving and driven members, comprising a flywheel drive plate operatively connected to torque input means, a hub assembly operatively connected to torque output means, and resilient means interposed between the flywheel drive plate and the hub assembly, said flywheel drive plate including an annular ring having a plurality of radially inwardly tapered drive arms extending into the path of the resilient means, said hub assembly including a barrel and integral radial flange and a pair of hub drive plates secured to the flange and encompassing the damper assembly, each plate having a plurality of inwardly offset drive straps in the path of said resilient means, and a floating idler divider having a plurality of radial arms interposed between pairs of said resilient means, the improvement comprising at least two retaining rings interposed between said hub drive plates and said flywheel drive plate, means on each ring for enabling movement of each ring with said flywheel drive plate in one direction of motion independent of said hub assembly and enabling said rings to rotate independently in opposite directions.

4,585,428

DAMPER DISC

Masaaki Asada, Ibaraki, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jun. 8, 1984, Ser. No. 618,547
Claims priority, application Japan, Jun. 9, 1983, 58-88925[U]
Int. Cl.[4] F16D *3/14*
U.S. Cl. 464—68 **9 Claims**



1. A damper disc comprising
a hub to be connected to a shaft and having a radial flange divided into an outer flange portion and an inner flange portion, the inner and outer flange portions being drivingly engageable;
a pair of side plates disposed relatively rotatably adjacent the radial flange;
torsion spring means circumferentially connecting the outer flange portion and the side plates;
a sub-plate attached to the outer flange portion, positioned between one of the side plates and the radial flange, and having a plurality of notches;
a first friction means disposed between the hub and the sub-plate for exerting a friction force between the hub and the sub-plate; and
a second friction means disposed between the side plates and the sub-plate for exerting a friction force between the side plates and the sub-plate;
said first friction means including a cylindrical bushing having
a bushing flange at one end, extending radially, to be pressed to the inner flange portion, and
a plurality of ribs which engage notches of the sub-plate;
a cone spring having a predetermined axial length selected such that there is an insubstantial change in compression

load on the cone spring when the predetermined axial length is reduced, having a plurality of notches which reduce elastic stiffness of the cone spring and which receive the plurality of ribs, the cone spring being disposed between the sub-plate and the bushing flange; and

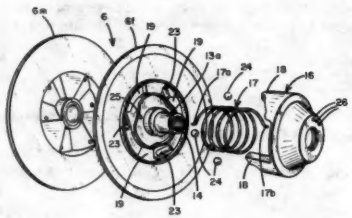
the sub-plate, the cone spring and the bushing being prevented from relative rotation by the ribs and notches.

4,585,429

V-BELT TYPE CONTINUOUSLY VARIABLE TRANSMISSION

Gregory J. Marier, Brooklyn Park, Minn., assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 19, 1984, Ser. No. 651,910
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—12 **8 Claims**



1. In a V-belt, continuously variable transmission of the type including an engine-driven drive shaft, a drive pulley including a fixed sheave fixed axially of said drive shaft, a movable sheave axially displaceable of said drive shaft, and a speed responsive mechanism operatively coupled to said movable sheave for varying its spacing from said fixed sheave as a function of engine speed, a driven shaft, a driven pulley including a fixed sheave fixed axially of said driven shaft, a movable sheave movable axially of said driven shaft, a V-belt spanning said drive pulley and said driven pulley, and an improved torque responsive mechanism operatively coupled to said movable sheave of said driven pulley for varying its spacing from said fixed sheave of said driven pulley as a function of torque applied to said driven shaft, comprising:

(a) a spring cap disposed on said driven shaft on one side of said fixed sheave of said driven pulley and having a plurality of arcuate, inclined cam surfaces projecting in the axial direction at equally spaced radial locations from one side surface thereof, said cam surfaces each including an arcuate groove therein, said arcuate, inclined cam surfaces extending through openings formed in said fixed sheave of said driven pulley and attached to said movable sheave of said driven pulley positioned on the side of said fixed sheave of said driven pulley which is opposite said spring cap;

(b) said fixed sheave of said driven pulley including arcuate projections extending from one side thereof proximate said openings in said fixed sheave of said driven pulley, said projections each defining a groove in said cam surface sloping in the axial direction and each including an arcuate groove therein and being in circumferential alignment with said arcuate cam surfaces projecting from said spring cap, the arcuate grooves in said arcuate cam surfaces projecting from said spring cap being longer circumferentially than said arcuate grooves formed in said cam surfaces of said arcuate projections of said fixed sheave of said driven pulley;

(c) a compression spring extending between said spring cap and said fixed sheave of said driven pulley for exerting a separating force therebetween; and

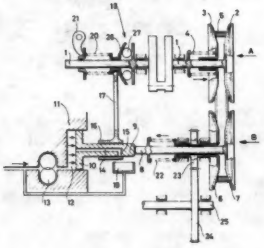
(d) a plurality of rolling members individually contained in said arcuate grooves of said arcuate cam surfaces projecting from said spring cap and said arcuate grooves in said arcuate projections of said fixed sheave of said driven pulley, whereby when a torque load on said driven shaft changes, the aligned cam surfaces of said spring cap and said fixed sheave of said driven pulley move relative to one another with rolling friction therebetween to vary the spacing between said movable sheave and fixed sheave of said driven pulley.

4,585,430

VARIABLE-TRANSMISSION-RATIO MECHANICAL DRIVE WITH V-BELT AND EXPANSIBLE SHEAVES

Bruno Gaddi, Pisa, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy

Filed Mar. 6, 1984, Ser. No. 586,680
Claims priority, application Italy, Jul. 18, 1983, 22109 A/83
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—12 **3 Claims**



1. A mechanically driven transmission system for continuously varying the transmission ratio between a drive shaft and a driven shaft, comprising:

a driving means for rotating the drive shaft;

a pair of expandable sheaves, each of which comprises an axially fixed half-sheave and an axially movable half-sheave, the first of said pair of sheaves connected to the drive shaft and the second of said pair of sheaves connected to the driven shaft;

a V-belt driving means connecting each of said pairs expandable sheaves;

a resilient member associated with the driven shaft and normally urging said movable half-sheave toward said fixed half-sheave of the driven shaft;

an hydraulic servomechanism for positioning said movable half-sheave of the driven shaft against the bias of said resilient member;

said hydraulic servomechanism comprising:

a pump for providing a pressurized motive fluid;

a single acting hydraulic piston in communication with said moveable half-sheave of the driven shaft and actuated by said motive fluid;

an outlet valve adapted to control an outlet port formed in said hydraulic piston for controlling the flow of said motive fluid therethrough;

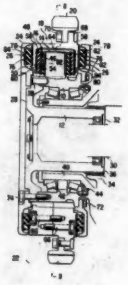
a governor for controlling the position of said outlet valve as a function of the speed and load of said driving means thereby providing the force for positioning said movable half-sheave of said driven shaft.

4,585,431

SPROCKET ASSEMBLY FOR A TRACK TYPE VEHICLE

Haruhiko Umeda, Yokohama; Nobuo Fujita, Uji; Keiji Bando; Kazuyuki Onohara, both of Kyoto, and Yasuo Fujiwara, Yawata, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Japan

Filed Aug. 3, 1984, Ser. No. 637,196
Claims priority, application Japan, Aug. 4, 1983, 58-141855
Int. Cl.[4] F16D *3/00*; F16H *55/14*
U.S. Cl. 474—94 **3 Claims**



1. A sprocket assembly for a track type vehicle, comprising:
(a) a hub;
(b) an inner rim concentrically mounted to the hub for joint rotation therewith;
(c) a series of cylindrical studs rigidly formed on the inner rim at circumferential spacings and projecting radially outwardly therefrom;
(d) a plurality of universal shock absorbers each in the shape of a hollow cylinder, the shock absorbers being concentrically fitted one over each stud on the inner rim;
(e) an outer rim disposed concentrically outwardly of the inner rim and having defined therein a series of radial cavities which closely receive the respective shock absorbers fitted over the studs on the inner rim, the shock absorbers elastically bearing the forces exerted between the inner and outer rims in all of the radial, axial, and rotational directions of the sprocket assembly, said outer rim being split into two sections along a plane normal to the axis of the sprocket assembly, the two sections being rigidly fastened together;
(f) a series of sprocket teeth formed circumferentially on the outer rim;
(g) a pair of annular end covers secured to the opposite axial ends of the inner rim and disposed on the opposite sides of the outer rim with gaps therebetween;
(h) a pair of annular seals of elastic material sealing the gaps between the outer rim and the end covers, the seals elastically bearing the forces exerted between the outer rim and the end covers in all of the radial, axial, and rotational directions of the sprocket assembly; and
(i) said pair of end covers being fastened to the inner rim so as to apply precompression to the annular seals.

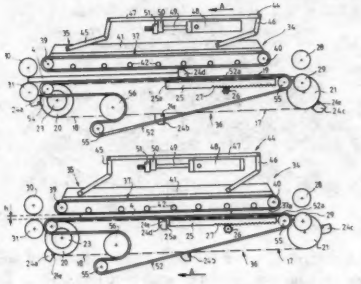
4,585,432

CARTON BLANK FOLDING, GLUEING AND STAPLING APPARATUS

Yves Marysse, Angers, France, assignor to Societe de Developpement de Materiels D'Emballage - Sodeme, Avrille, France

Filed Apr. 20, 1984, Ser. No. 602,548
Claims priority, application France, Apr. 22, 1983, 83 06696
Int. Cl.[4] B31B *1/68, 3/02*
U.S. Cl. 493—59 **11 Claims**

1. In an installation for the continuous production of folded, preassembled packing cartons from flexible sheets comprising, end to end along a flow path, means for forming carton blanks from the sheets, a glueing unit, a folding unit, a positioning station and a stapler; and means for moving the blanks from the blank forming means to the stapler along the flow path; the glueing unit and the stapler being means operable separately or simultaneously for preassembling the blanks in cooperation with the folding unit; the positioning station located therein being equipped with a first transfer device comprising means for driving the blanks without slippage at a specified speed before introduction of the blanks into the stapler, the improvement comprising:



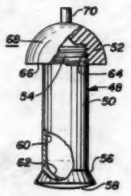
a second transfer device, located in said positioning station, comprising means for driving the blanks before introduction of the blanks into the stapler at a speed that is higher than said specified speed and that is equal to the speed of passage of the blanks through the glueing unit;
means, coupled to said positioning station and said second transfer device, for selectively rendering said second transfer device operative or inoperative, and
means, coupled to said positioning station and said first transfer device, for selectively rendering said first transfer device operative or inoperative.

4,585,433

SAMPLE CONTAINER FOR A TOP LOADING SWINGING BUCKET CENTRIFUGE ROTOR

Paul M. Cole, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1984, Ser. No. 656,644
Int. Cl.[4] B04B *5/02*
U.S. Cl. 494—20 **20 Claims**



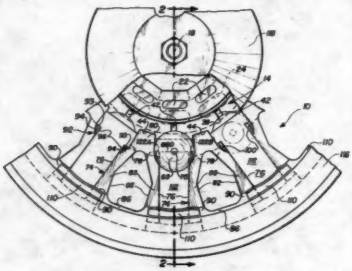
1. A sample container for use in a centrifuge rotor having a pair of knife-like pivot edges therein comprising:
a body member having a sample-receiving volume therein;
a planar pivot surface on the body, the surface being adapted to operably engage along one diametrical dimension thereof each of the pivot edges for supported pivotal movement thereon from a first to a second position; and
guide means on the container for guiding the same during the pivotal motion thereof.

4,585,434

TOP LOADING SWINGING BUCKET CENTRIFUGE ROTOR HAVING KNIFE EDGE PIVOTS

Paul M. Cole, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 1, 1984, Ser. No. 656,645
Int. Cl.[4] B04B *5/02*
U.S. Cl. 494—20 **12 Claims**



1. A centrifuge rotor for subjecting a sample of a material carried in a sample container to a centrifugal force field, the sample container having a pivot surface thereon, the rotor comprising:

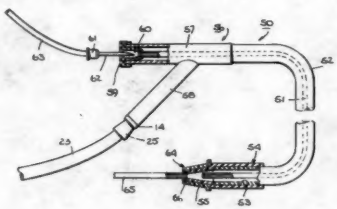
a pair of sample container pivot elements disposed in circumferentially spaced spaced relationship around the rotor, each sample container pivot element having a thin knife edge arranged to receive the pivot surface of the sample container along a substantially line contact whereby the sample container is receivable within the rotor with any portion of the pivot surface received on the pivot elements.

4,585,435

EXTENSION SET FOR DRUG DELIVERY

Vincent L. Vaillancourt, Livingston, N.J., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.

Filed May 31, 1984, Ser. No. 615,594
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—27 **25 Claims**



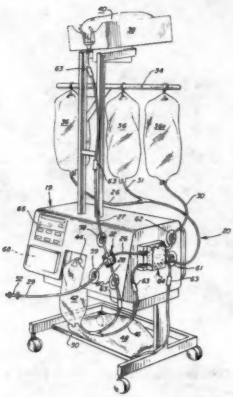
1. An extension set comprising means defining at least two lumen, one of said lumen being sized to convey an intravenous fluid therethrough and the other of said lumen being sized to convey a drug therethrough; and a common connector receiving each lumen, said connector having means at one end for connecting to a catheter to deliver an intravenous fluid and a drug thereto, a pair of sockets receiving said lumen therein and a partition wall between said sockets and extending to said means at said one end of said connector.

4,585,436

PERITONEAL DIALYSIS APPARATUS

Ralph Davis, Burlington, Wis.; Marc Bellotti, Winnetka, and Arthur Lueders, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 3, 1983, Ser. No. 548,390
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—29 **10 Claims**



1. In automated peritoneal dialysis apparatus having dialysis solution supply station, a dialysis solution heating station, a dialysis solution volume measuring station, a pump station for moving said dialysis solution, and valve means for controlling dialysis solution flow around said apparatus, the improvement comprising, in combination:

bracket means for receiving and holding a multiple fluid flow junction connector of a flexible-conduit set member carried by said apparatus, said bracket means being adapted to hold said multiple junction connector in only a single position of orientation, whereby flexible conduits of said set member extending from said multiple junction connector are naturally directed toward their intended destination stations;

wherein said bracket means defines a plurality of pins to pass through corresponding apertures of a mounted multiple junction connector for retention thereof in a single position of orientation in which said pins define enlarged outer ends to provide snap-fit retention for said mounted conector and wherein said pins are disposed in a triangular pattern.

4,585,437

INTRODUCER FOR AN UMBILICAL ARTERY CATHETER

Mark D. Simms, 18 Tamarack La., Woodbury, Conn. 06798

Continuation-in-part of Ser. No. 463,143, Mar. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 225,766, Jan. 16, 1981, abandoned. This application Jul. 20, 1984, Ser. No. 632,644
Int. Cl.[4] A61M *29/00*
U.S. Cl. 604—106 **10 Claims**

1. A device for providing a guidance means to insert an object into a very small opening, comprising:

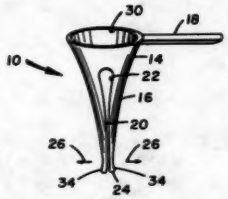
a body means, said body means being hollow and funnel-like in configuration;

a plurality of nibs, each nib of said plurality of nibs being very flexible and spring-like, each said nib having a memory, each nib of said plurality of nibs being suitably affixed to said body means;

a plurality of bulbous means, each bulbous means of said

plurality of bulbous means being separately and individually suitably affixed to the distal end of a respective nib of said plurality of nibs opposite to said body means; and

a plurality of lead tips, said lead tips being very thin and tapered, each thin tapered lead tip of said plurality of lead



tips having a wide first end and a narrow second end, said wide first end of each said lead tip being separately and individually suitably affixed to the distal end of a respective bulbous means, said plurality of lead tips serving to guide said plurality of bulbous means into an opening.

4,585,438

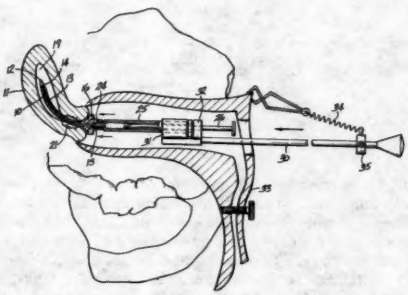
DEVICE FOR INJECTING MATERIAL DIRECTLY INTO UTERINE CAVITY

Amnon Makler, 50 Disraeli Street, Abuza, Haifa, Israel (34334)

Filed Apr. 14, 1983, Ser. No. 484,907

Int. Cl.⁴ A61M *29/00*

U.S. Cl. 604—106 **10 Claims**



1. A device for injecting material directly into the uterine cavity of the non-pregnant uterus which comprises: a semi-rigid tubular member for insertion into the uterine canal through which fluid may be injected; sealing means communicating with said tubular member for sealing the external orifice of the cervical canal including an enlarged base portion of said tubular member which sealingly fits into the external orifice and tightly seals said external orifice, said sealing means and tubular member permitting free circulation of said fluid in the uterine cavity and uterine canal; a syringe communicating with said tubular member for holding the fluid to be injected; a speculum for insertion into the vagina in cooperation with said syringe; and a resilient means engaged with said speculum for retaining said sealing means in sealing engagement with the external orifice of the cervical canal by urging said resilient means into sealing engagement with the external orifice of the cervical canal, wherein said device has a minimum amount of dead space less than about 0.1 cc.

4,585,439

PORTABLE INFUSION UNIT

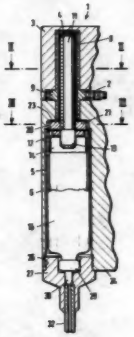
Peter Michel, Burgdorf, Switzerland, assignor to Disetronic AG., Burgdorf, Switzerland

Filed Sep. 7, 1984, Ser. No. 648,051

Claims priority, application Switzerland, Sep. 7, 1983, 4887/83

Int. Cl.⁴ A61M *37/00*

U.S. Cl. 604—155 **10 Claims**



1. Portable infusion unit for the automatic discharge of liquid from an exchangeable injection ampule (**15**; **115**) with a driving device for the advance of the piston (**14**) of the injection ampule (**15**; **115**) comprising, a rotatable driver sleeve (**8**; **108**) connected in said unit to be rotatably driven by the driving device, a threaded rod (**11**) for the advance of the piston (**14**) of the injection ampule (**15**; **115**) a nut (**21**; **121**) threadably connected on the threaded rod (**11**), said threaded rod (**11**) removably insertable into said driver sleeve (**8**; **108**) by simple axial movement, means (**22**; **122**) on said unit engagable with said nut (**21**; **121**) to secure said nut against rotation relative to said unit, a non-rotatable but longitudinally shiftable coupling between said driver sleeve (**8**; **108**) and said threaded rod securing said threaded rod (**11**) against rotation relative to said driver sleeve (**8**; **108**) but allowing it to rotate relative to said nut (**21**; **121**) upon rotation of said driver sleeve relative to the nut by the driving device, said threaded rod (**11**) and nut (**21**; **121**) removable as a unit from said driver sleeve and unit when the injection ampule (**15**; **115**) is removed from the unit, and said nut held securely in engagement with said means (**22**; **122**) by the rear end of the injection ampule when the threaded rod (**11**) and nut (**21**; **121**) and the injection ampule are inserted into the unit.

4,585,440

INTRAVENOUS CATHETER ASSEMBLY

Jean Tchervenkov, and Christo Tchervenkov, both of 2760 Napoleon Blvd., Brossard, Canada (J4Y 2A3)

Filed Jun. 21, 1985, Ser. No. 747,445

Claims priority, application Canada, Feb. 1, 1985, 473403

Int. Cl.⁴ A61M *5/00*

U.S. Cl. 604—164 **2 Claims**

1. An intravenous catheter assembly comprising

(i) a hub having a central bore disposed therethrough,

(ii) a flexible catheter tube of elastic material, one end of said tube being secured to the hub at one end of said bore, said catheter tube being aligned axially with said bore,

(iii) sealing means mounted at the other end of said bore,

(iv) a passage angularly disposed relative to said bore, said passage being disposed intermediate the ends of the bore and being in fluid communication therewith,

(v) a catheter plunger tube of rigid or semi-rigid material having a blunt end, said sealing means slidingly engaging

the outer surface of said plunger tube to prevent the flow of fluid,

(vi) a resealable plug mounted at the other end of said plunger tube,

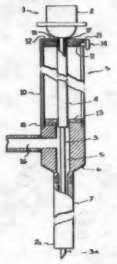
(vii) means for supporting said plunger tube coaxially relative to said bore, said plunger tube being displaceable between a retracted position and an extended position,

(viii) means for urging said plunger tube between said positions,

(ix) a removable trocar consisting of a fluid collecting chamber and a hollow introducer needle for introducing said catheter tube into a blood vessel, said needle being in fluid communication with said chamber, and,

wherein

(a) said needle extends through said plunger tube, said bore and said catheter tube, the sharpened end of said



needle projecting beyond the distal end of said catheter tube and said resealable plug slidingly engaging the outer surface of said needle to permit sealing of said plunger tube when said needle is withdrawn therefrom,

(b) said plunger tube and said introducer needle are relatively dimensioned so that the plunger tube slidingly engages the outer wall surface of said needle,

(c) said plunger tube and said catheter tube are relatively dimensioned so that the plunger tube slidingly engages the inner wall surface of the catheter tube, and

(d) said plunger tube and said catheter are relatively dimensioned in length so that when in said extended position the blunt end of said plunger tube projects slightly beyond the distal end of said catheter tube and when in said retracted position the blunt end of said plunger is intermediate said passage and said sealing means.

4,585,441

IV FLUID CONTROL SYSTEM WITH FLUID RUNAWAY PREVENTION

G. Kent Archibald, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 17, 1984, Ser. No. 650,838

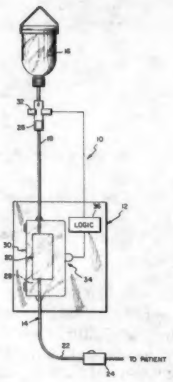
Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—245 **15 Claims**

1. In an IV fluid control system of a type including an IV set for connection between a source of fluid and a patient, and a control device for receiving and acting upon a portion of the IV set to control fluid flow from the source to the patient; the improvement comprising:

means for providing a sensor signal which is a function of a parameter which changes depending on whether there is fluid flow through the IV set; and

means responsive to the sensor signal for providing an indication that the IV set should not be removed from the



control device unless the sensor signal indicates that fluid flow through the IV set is stopped.

4,585,442

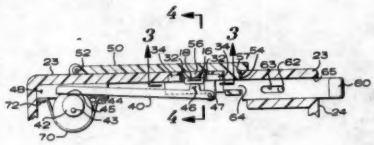
MINIATURE INTRAVENOUS INFUSION RATE CONTROLLER

Andrew J. Mannes, Chevy Chase, Md., assignor to Ivy Medical, Inc., Minneapolis, Minn.

Filed Jul. 26, 1984, Ser. No. 634,645

Int. Cl.[4] A61M *5/005*

U.S. Cl. 604—250 **18 Claims**



1. An intravenous drip rate controller device for use in controlling the drip rate of a solution from an intravenous container mounted on an intravenous pole stand and having a drip chamber connected in fluid flow relation with said intravenous container, a flexible elastic drip tube connected to the drip chamber and extending downwardly therefrom for transporting a solution through the continuous opening in said tube, and a drip rate sensing means positioned in proximity to the drip chamber for sensing each intravenous drip and generating an electrical signal in response to each drip indicative of the drip rate, said device comprising:

a trough receiving said tube;

a lever pivotable at one end thereof and engageable at the other end with a cam, said cam being in rotational engagement with a motor actuated by electrical signals from said drip rate sensing means, and said lever including a blade which is engageable with one side of said tube in said trough;

a tubing door pivotable at one end and having a plastic material layer projecting therefrom for engagement with the other side of said tube opposite said blade;

a means for locking said door in a closed position over said trough wherein said plastic material layer may engage said tube; and

resilient band located on each side of said trough and engageable with opposed side walls of said tube at locations thereon where said tube would tend to distend in response

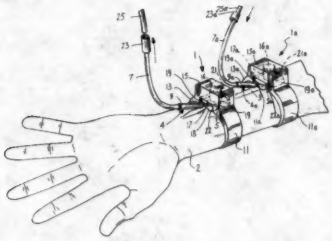
to the squeezing action of said lever and said door to apply a restoring force to the sides of said tube when the pressure of said blade and door on said tube is reduced.

4,585,443

CATHETER LOCATING DEVICE

Jerry M. Kaufman, Englishtown, N.J., assignor to Hemedix International, Inc., Cambridge, Mass.

Filed Oct. 21, 1983, Ser. No. 544,249
Int. Cl.[4] A61M 5/32
U.S. Cl. 604—174 **32 Claims**



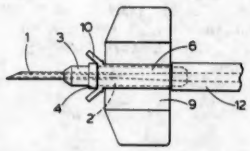
1. A device for securing a catheter to a body fluid-carrying conduit in a patient comprising anchoring means for attachment to said patient at a predetermined location at which said body fluid-carrying conduit is located, and an adjustable saddle rotatably mounted on said anchoring means, said adjustable saddle including an apeture adapted to receive said catheter, and a contact surface adapted for alignment with said body fluid-carrying conduit in said patient, and a saddle channel extending between said aperture and said contact surface, said adjustable saddle being at least partially rotatable about an axis substantially perpendicular to said contact surface, whereby said adjustable saddle may be rotated after said device has been attached to said patient, so as to permit said catheter to be accurately located in said body fluid-carrying conduit upon its insertion into said aperture.

4,585,444

INTRAVENOUS NEEDLE ASSEMBLY

Christopher Harris, Redditch, England, assignor to Smith and Nephew Associated Companies Limited, London, England

Filed Mar. 22, 1983, Ser. No. 477,805
Int. Cl.[4] A61N 5/00
U.S. Cl. 604—177 **2 Claims**



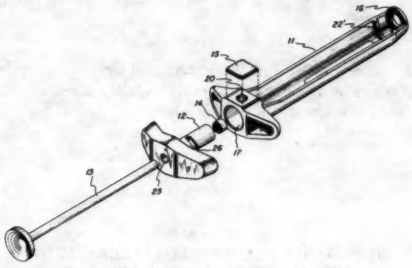
1. A handle for use in an intravenous needle assembly for placing and maintaining an intravascular needle within a vein which comprises a body portion being connected via hinge portions to oppositely extending wing sections, in which said body portion has at its distal end an insertion aid in the form of a pair of laterally extending horns aginst which pressure may be applied when introducing the point of the needle beneath the skin and in which each of said wing portions of the handle has adjacent to the hinge a thinner portion having dimensions such that when the wings are folded the thinner portion conforms to and folds around the body portion in close fit therewith, each of said thinner portions carries a raised area on the surface which in use contacts the body portion when the wings are folded so as to apply pressure to the body portion.

4,585,445

HYPODERMIC SYRINGE HOLDER FOR USE WITH DISPOSAL AMPOULES

Frederick B. Hadtke, New Providence, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Aug. 19, 1985, Ser. No. 766,630
Int. Cl.[4] A61M 5/245
U.S. Cl. 604—234 **10 Claims**



1. In a hypodermic syringe holder of the type where an axially movable ampoule clamping element is engaged with the rim of an associated ampoule to securely immobilize the ampoule within the barrel of the syringe holder by rotating the clamping element about its longitudinal axis within the head portion of the holder, the improvement which comprises in combination: a semi-cylindrical body portion having a generally cylindrical head portion; an axially mounted clamping element rotatableabout its longitudinal axis within the cylindrical head of said body portion and having a barrel portion, a handle portion and a helical groove on the outer surface of the barrel portion thereof, said clamping element having a bore therethrough with diminished and enlarged portions thereof; a plunger element having affixed to its lower end a piston engaging means, said plunger rod and piston engaging means being axially and slidably receivable within said bore of said clamping element; and a boss element having on its underside a hemispherical portion engageable with said helical groove of said clamping element, said boss being permanently affixed to the head portion of said syringe holder to thereby secure all elements thereof together in cooperative engagement with one another.

4,585,446

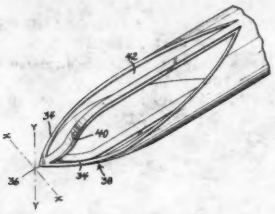
DIALYSIS NEEDLE

Joseph Kempf, 121 S. Vernon St., Princeton, Ill. 61356

Filed Mar. 16, 1984, Ser. No. 590,497
Int. Cl.[4] A61M 5/005
U.S. Cl. 604—274 **10 Claims**

1. A dialysis needle or the like comprising:
a tube with a wall having a bore extending therethrough;
a razor-edged cutting blade extending transversely across the forward end of said tube, said blade having a generally "V" shape with a pair of razor-sharp cutting edges diverging rearwardly from a centrally-located needle-sharp point to opposite sides of the tube;
a pair of transversely-opposed smooth, tissue-spreading ribs located between the cutting edges and diverging rearwardly from said point to opposite sides of the tube;
forwardly open openings between the cutting edges and tissue-spreading ribs providing fluid flow passages extending rearwardly from the point to the rear ends of the ribs and communicating with said bore and

the transverse widths across the cutting edges and across the ribs progressively increasing from the point rearwardly at



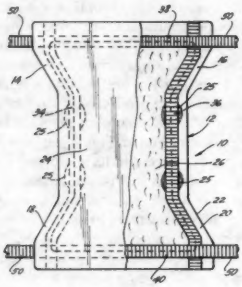
different rates to enable coincidental incising and spreading of tissue without pulling the ends of the incision apart and taut against the cutting edges.

4,585,447

DISPOSABLE DIAPER WITH INTERSECTING STRESSED CROTCH AND WAIST SEALS

Hamzeh Karami, Weston, Mass., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 15, 1985, Ser. No. 723,380
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—385 A **4 Claims**



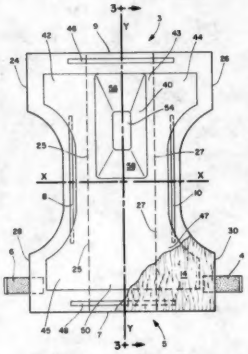
1. A disposable diaper comprising a backing sheet, an absorbent pad on said backing sheet, said absorbent pad being of an hour-glass shape defining pairs of ears spaced from a crotch area, a top sheet overlying said absorbent pad, said top sheet being secured to said backing sheet on at least two opposite peripheral edges thereof, a first pair of elastic members, adhesive means securing said first pair of elastic members to said backing sheet along two opposite side edges thereof to define crotch seals with said side elastic members overlying said ears, and a second pair of elastic members secured to said backing sheet along the end edges to define waist seals with said second pair of elastic members overlying said ears and physically intersecting and bonded to said first pair of elastic members and cooperating to place direct initial stress and stretch on said waist seals and crotch seals respectively and to hold said ears in a raised position, said second pair of elastic members having ends extending beyond said diaper forming elastic extensions held in a raised position, said extensions being coated with a pressure-sensitive adhesive and having release sheets thereon, said extensions forming securement means for securing said diaper about an infant.

4,585,448

DISPOSABLE GARMENT HAVING HIGH-ABSORBENCY AREA

Kenneth M. Enloe, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 19, 1984, Ser. No. 683,778
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—378 **11 Claims**



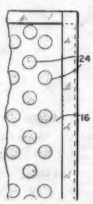
1. An absorbent garment comprising an impervious backing, a permeable body side lining and an absorbent between said impervious backing and said body side lining, said garment divided into six panels by folds, the front of the garment divided into a front center panel and two side ears, the back divided into a back center panel and two side ears wherein said back and front ears have between about 20 and up to 40 percent of the absorbency of said garment, said front center panel has between about 30 and about 50 percent of said absorbency of said garment and said back center panel has between about 20 and about 30 percent of said absorbency and wherein between about 25 percent and about 45 percent of the total absorbency is in the back of the diaper.

4,585,449

DISPOSABLE DIAPER WITH IMPROVED TOP SHEET

Hamzeh Karami, Weston, Mass., assignor to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 458,510, Jan. 17, 1983, abandoned, and Ser. No. 292,475, Aug. 13, 1981, abandoned, which is a continuation of Ser. No. 13,711, Feb. 5, 1980, abandoned, which is a continuation of Ser. No. 913,714, Jun. 8, 1978, abandoned. This application Apr. 22, 1985, Ser. No. 725,459
Int. Cl.[4] A41B *13/02*
U.S. Cl. 604—378 **2 Claims**



1. A hydrophobic top sheet for a disposable product, said top sheet being permeable and being of spun-bonded hydrophobic fibers being free of any binder and being selected from the group consisting of polyamide, polypropylene and polyes-

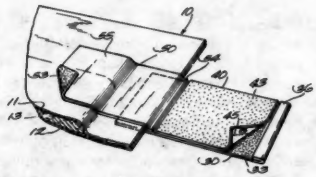
ter fibers and mixtures thereof, and from 0.1 to 0.6% by weight of a surfactant printed on the top surface of said top sheet to facilitate fluid passage therethrough but minimize wetback, said top sheet having a maximum wetback facter of 10 and a penetraction factor of at least about 80, said surfactant not extending below said top surface, said surfactant being printed in spaced spots.

4,585,450

REFASTENABLE TAPE SYSTEM FOR DISPOSABLE DIAPERS AND SIMILAR GARMENTS

Paulette M. Rosch, Outagamie County, and Thomas J. Kopacz, Winnebago County, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 29, 1985, Ser. No. 728,375
Int. Cl.⁴ A61F *13/16*
U.S. Cl. 604—390 **8 Claims**



1. In a refastenable tape member for disposable garments of the type including a primary tape element for effecting a first closure of a portion of the garment, a secondary tape element for effecting second and any subsequent closures thereof, and a stationary release element secured to the garment and having an exposed surface,

the improvement wherein:

(1) the secondary tape element comprises a flexible backing strip and a pressure sensitive adhesive layer on a surface of the backing strip,

a first portion of the pressure sensitive adhesive layer being adhesively bonded to part of the garment, and a second portion of the pressure sensitive adhesive layer extending beyond the part of the garment to which the first portion is bonded;

(2) the primary tape element comprises a flexible backing strip having opposed upper and lower surfaces and a pressure sensitive adhesive layer on the upper surface,

the lower surface of the primary tape element being in contact with the pressure sensitive adhesive layer of the secondary tape element with

a major portion of the area of said lower surface being releasably joined to the pressure sensitive adhesive layer of the secondary tape element, and

a minor portion of said lower surface being adhesively bonded to the pressure sensitive adhesive layer of the secondary tape element; and

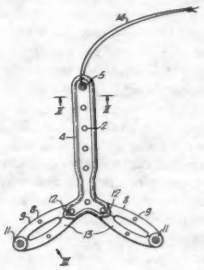
(3) the refastenable tape member being foldable between (i) a storage position in which the pressure sensitive adhesive layer of the primary tape element is releasably joined to the exposed surface of the stationary release element and (ii) an open position wherein the pressure sensitive adhesive layer of the primary tape element is separated from the stationary release element and exposed for effecting the first closure of the garment, the secondary tape element being releasable from the lower surface of the primary tape element when in its first closure condition to thereby expose pressure sensitive adhesive layer of the secondary tape element for effecting second and subsequent closures of the garment.

4,585,451

DEVICES WHICH ARE ADAPTED TO SLOWLY RELEASE CHEMICALS, SUCH AS HORMONES, DRUGS AND MINERALS

Thomas D. Millar, Hamilton, New Zealand, assignor to AHI Operations Limited, Manukau, New Zealand

Filed May 9, 1983, Ser. No. 492,567
Claims priority, application New Zealand, Oct. 5, 1982, 200564
Int. Cl.⁴ A61F *5/46*
U.S. Cl. 604—892 **3 Claims**



1. A device for insertion into the vaginal cavity of an animal and for producing a controlled rate of release of chemicals into said vaginal cavity, said device comprising a flexible member having a plurality of compressible lobes wherein one lobe is longer than the others and the shorter lobes are each in the form of a closed loop, wherein each loop is formed by two arms joined together such that each loop has two ends and the central portion of each arm is displaced away from a plane containing both ends of the loop and in opposite directions, and wherein said shorter lobes are foldable during insertion of said device into and removal of said device from the vaginal cavity and at least some of the lobes having on a surface thereof a solid impregnated with chemical impreganat adapted to leach from the solid when exposed to body fluids, said longer lobe having drawstring means for a single step withdrawal of said device from the body cavity.

4,585,452

TRANSDERMAL SYSTEMIC DOSAGE FORMS

Steven Sablotsky, Miami, Fla., assignor to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Apr. 12, 1983, Ser. No. 484,388
Int. Cl.⁴ A61M *7/00*
U.S. Cl. 604—896 **12 Claims**

1. A sustained release dosage unit form suitable for transdermal administration of a drug to a patient over a prolonged period of time wherein the rate control mechanism is based upon a saturated amount of drug on the skin of said patient and said skin is the rate controlling membrane without interference from any barrier to passage of said drug to said skin to defeat said rate control mechanism, said sustained release dosage unit form comprising a laminate produced by

(a) providing a laminate having

(i) an outer, removable layer comprising a siliconized polyvinylidine chloride-polyvinyl chloride thermoplastic layer that can be removed from said laminate prior to administration of said sustained release dosage unit form to said patient, said thermoplastic layer having a glass transition temperature sufficiently low so that, upon heating of said laminate to said glass transition temperature, the remaining layers of said laminate will not be effected adversely;

(ii) a first adhesive layer of a cross-linked acrylate polymer that is capable of saturation with said drug;

(iii) a polyurethane semipermeable barrier layer that is both

(1) permeable to said drug to permit passage of said drug from a reservoir remote from said first adhesive layer (ii) without diminishing the rate at which said drug leaves said first adhesive layer when it is saturated with said drug; and

(2) substantially impermeable to passage of a solvent from said drug reservoir, said solvent, if permitted substantially to enter said first adhesive layer being of a character to impair the adhesive character of said sustained release dosage unit form; and

(iv) a second adhesive layer on said semipermeable barrier layer (iii) remote from said first adhesive layer (ii);

(b) heating said laminate to at least the glass transition temperature of said outer, removable layer;

(c) maintaining the heated laminate of step (b) at a temperature of at least said glass transition temperature while simultaneously subjecting said outer, removable layer (i) to a vacuum sufficient to draw said laminate into a well shape to function as a drug reservoir;

(d) pouring an aqueous solvent containing said drug into the well-shaped drug reservoir formed in step (c); and

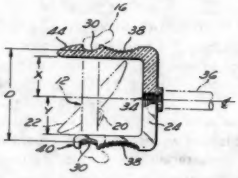
(e) maintaining intimate contact between said aqueous solvent and said semipermeable barrier layer (iii) by placing an outer laminate layer (v) over said well-shaped area, wherein said drug migrates over said semipermeable barrier layer (iii) after production of said sustained release dosage unit form causing said first adhesive layer (ii) to be saturaed with said drug when said sustained release dosage unit form is applied to said skin of said patient, said sustained release dosage unit form having said outer, removable layer (i) stripped away from said sustained release dosage unit form prior to applying said first adhesive layer (ii) directly to said skin at a site through which said drug is to be transdermally delivered.

4,585,453

DISPOSABLE HOLDER FOR PROSTHETIC HEART VALVE

Richard L. Martin, Fountain Valley, and Michael B. Baranowski, Corona Del Mar, both of Calif., assignors to Shiley, Incorporated, Irvine, Calif.

Filed Feb. 22, 1983, Ser. No. 468,561
Int. Cl.[4] A61F *2/24*; A61B *17/00*
U.S. Cl. 623—2 **20 Claims**



1. A device for facilitating the surgical replacement of a heart valve of a patient and for reducing the time required for said surgical replacement in order to decrease the danger to the life of said patient, comprising:

a disposable holder adapted to be correctly prepositioned on said prosthetic heart valve for holding said prosthetic heart valve in place during replacement, said holder comprising:

a body;

means on said body and integral therewith, for flexibly releasably engaging said prosthetic heart valve, said integral engagement means providing the sole means for holding said valve in position during implantation; and

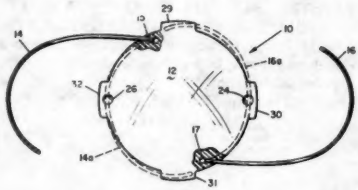
means on said engagement means for manually manipulating said engagement means in order to remove said holder from said prosthetic heart valve following implantation.

4,585,454

INTRAOCULAR LENS DEVICE

Robert N. Fabricant, 285 E. 24th St., Upland, Calif. 91786

Filed Feb. 21, 1984, Ser. No. 581,727
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **15 Claims**



1. In an intraocular lens device, the combination comprising:

optic means having an anterior and a posterior surface;

at least two generally resilient haptic means, said haptic means having at least one end thereof secured to said optic means with said haptic means extending outwardly from the periphery of said optic means; and

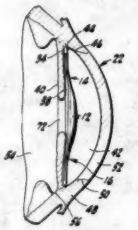
at least two haptic engaging means formed on the posterior surface of said optic means adjacent the periphery thereof for selectively releasably retaining said haptic means in an inwardly flexed position in proximate relation to the periphery of said optic means, said haptic engaging means being positioned for engagement with said haptic means at a position generally intermediate the ends thereof.

4,585,455

INTRAOCULAR LENS WITH IRIS SPACER MECHANISM

John M. Blackmore, Redwood City, and Timothy Bittner, Duarte, both of Calif., assignors to Ioptex Inc., Azusa, Calif.

Filed Oct. 28, 1983, Ser. No. 546,435
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **7 Claims**



1. An intraocular lens for implantation in an eye comprising:

a. a lens portion having an optical axis; and

b. at least one appendage having a first end portion connected to said lens and extending outwardly therefrom, a second end portion including a terminus which is intended for contacting the periphery of the eye, said second end portion including a spacer for positioning between said terminus of said at least one appendage and the iris and positioned along said at least one appendage from said terminus toward said first end portion, said spacer comprising a solid mass being unitary with and extending from said terminus of said second end portion, said terminus and said spacer being free of openings therebetween, said

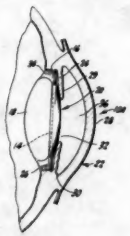
spacer having a thickness extending transverse to said end portion and terminus in a direction parallel to said optical axis and terminating at a location spaced outwardly from said end portion and terminus and an intermediate portion connecting said first and second end portions.

4,585,456

CORRECTIVE LENS FOR THE NATURAL LENS OF THE EYE

John M. Blackmore, Redwood City, Calif., assignor to Ioptex Inc., Azusa, Calif.

Filed Mar. 12, 1984, Ser. No. 588,579
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **8 Claims**



1. A corrective lens for the in-tact natural lens within the eye comprising:

a. an optical body formed of material which is intended to be bio-compatable with the eye; and

b. means for positioning said optical body within the eye adjacent the in-tact natural lens of the eye said positioning means including forming said optical body with a side complimentarily conforming to the shape of a side of the outer surface of the in-tact natural lens intended for placement of said optical body on and along the outer surface of the in-tact natural lens.

4,585,457

INFLATABLE INTRAOCULAR LENS

Irvin M. Kalb, 16 Pequot Trail, Westport, Conn. 06880

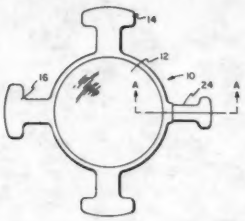
Filed May 16, 1985, Ser. No. 734,539
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 **6 Claims**

1. An intraocular lens comprising:

a pair of flexible, optically transparent, fluid impervious sheet members joined to form a lens capsule;

flexible positioning member means depending from said capsule, sized to be contained totally within the eye when in the extended position, and adapted to position the capsule once it is emplaced within the eye; and

valve means integral with a positioning member means and communicating with the interior of said lens capsule and adapted to pass and retain a fluid into said lens capsule to



thereby enable inflation of said capsule into the desired lens shape once it is emplaced within the eye.

4,585,458

MEANS AND METHOD OF IMPLANTING BIOPROSTHETICS

Kenneth Z. Kurland, 1073 Ross Ave., El Centro, Calif. 92243

Continuation-in-part of Ser. No. 272,134, Jun. 10, 1981, Pat. No. 4,400,833. This application Aug. 18, 1983, Ser. No. 524,351
Int. Cl.[4] A61F *2/08, 2/06;* A61B *17/04;* A61L *17/00*
U.S. Cl. 623—13 **7 Claims**

5. A bioprosthesis comprising:

(a) a tissue specimen in the form of a length of regular connective tissue treated to be non-antigenic;

(b) said length having at least one end designated for attachment to a bone of a patient to repair connective tissue damage; and

(c) a synthethetic mesh fastened by means of sutures to said one end and positioned thereon to interface between the length of connective tissue and the bone, some of said sutures having a filiform core of permanent material; and an outer layer of absorbable material susceptible to be dissolved into surrounding living tissues, whereby bone will grow around said mesh and into said one end of connective tissue to completely integrate said prosthesis into the physiology of the patient.

4,585,459

PROCESS FOR PREPARING LIQUID LOW-SALT AQUEOUS REACTIVE DYESTUFF COMPOSITIONS

Konrad Opitz, Liederbach, and Günther Schwaiger, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

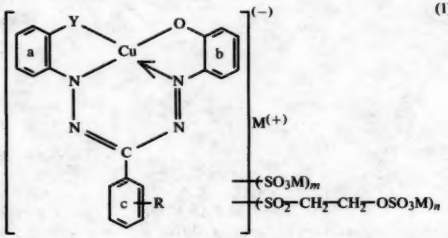
Filed Apr. 4, 1985, Ser. No. 719,769

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1984, 3413315

Int. Cl.[4] C09B *67/00*

U.S. Cl. 8—527 11 Claims

1. A process for separating sodium sulfate from an aqueous solution, containing sodium sulfate and less than 2% by weight of chloride, of a dyestuff of the formula (1)



(1)

in which

m denotes the number 1, 2 or 3,

n stands for the number 1 or 2,

M represents an alkali metal, such as sodium, potassium or lithium, in particular sodium,

R stands for hydrogen, chlorine, methyl, ethyl, methoxy, ethoxy or carboxy,

Y denotes the —O— or —COO— group and

the sulfo group(s) is or are bonded to the benzene nuclei a, b and/or c and the β-sulfatoethylsulfonyl group(s) is or are bonded to the benzene nuclei a and/or b, which comprises cooling down the solution to a temperature between +5° C. and −15° C. and separating off the precipitated sodium sulfate decahydrate.

4,585,460

REACTIVE DYES, PROCESS FOR THEIR PREPARATION AND USE THEREOF: BIS-VINYL OR SUBSTITUTED ETHYL SULPHENYL AZO REACTIVE DYES FOR TEXTILES

Hansrudolf Schwander, Riehen; Jürgen Markert, Ettingen, and Peter Aeschlimann, Allschwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

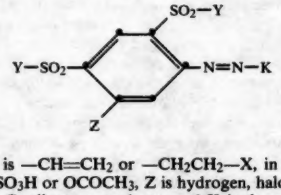
Filed Sep. 30, 1983, Ser. No. 537,661

Claims priority, application Switzerland, Sep. 30, 1982, 5754/82

Int. Cl.[1] C09B *62/51;* D06P *3/66*

U.S. Cl. 8—549 14 Claims

1. A reactive dye of the formula



wherein Y is —CH=CH$_2$ or —CH$_2$CH$_2$—X, in which X is OSO$_3$H, SSO$_3$H or OCOCH$_3$, Z is hydrogen, halogen, C$_1$–C$_4$Alkyl, C$_1$–C$_4$ alkoxy or carboxy, and K is the radical of an aminobenzene, aminonaphthalene, diphenylamine, pyrazolone, aminopyrazole, indole, pyridine, pyridone, pyrimidine, quinoline or acetoacetarylide, and K must contain at least one sulfo group or one aliphatic sulfatable substituent, and may be further substituted in the aromatic or heterocyclic rings.

4,585,461

METHOD OF MANUFACTURING A DIESEL FUEL ADDITIVE TO IMPROVE CETANE RATING

Jeremy W. Gorman, 5 Cedar Hill Rd., West Simsbury, Conn. 06092

Filed Aug. 1, 1984, Ser. No. 636,482

Int. Cl.[4] C10L *1/24*

U.S. Cl. 44—53 10 Claims

1. A method of manufacturing a cetane improver, which comprises:

providing a quantity of fusel oil;

mixing a highly paraffinic hydrocarbon which is substantially free from aromatics and unsaturates, said hydrocarbon having a molecule which contains from 12 to 28 carbon atoms and 22 to 58 hydrogen atoms and which is (1) substantially inert to a liquid phase nitration process, (2) substantially insoluble in water, and (3) soluble in fusel oil, this mixing step causing separation of water from the fusel oil; and

nitrating the mixture by the intermixing of the above mixture with a mixture of nitric and sulfuric acid in the liquid phase.

4,585,462

COMBUSTION IMPROVER FUEL ADDITIVE

George H. Kitchen, III, 646 Lakeview Cir., Rio Rancho, N. Mex. 87124

Filed Jul. 10, 1984, Ser. No. 629,444

Int. Cl.[4] C10L *1/22*

U.S. Cl. 44—62 6 Claims

1. A fuel additive for improving the combustion efficiency and storage stability of stored fuel which is capable of reducing the amount of macroscopic sludge particles formed from polymerization reactions promoted by bacteria and oxidation in fuel and improving the combustion efficiency of the fuel and reducing the soot emissions and scale formation of such fuel in a combustion chamber when used in amounts of from about one part of additive composition to between 3000 to about 10,000 parts by weight of fuel and containing in parts by weight per 100 parts by weight of additive about 50 parts by weight of a polymerizate of ethylene diamine, about 15 parts by weight of a naphtha solvent, about 15 parts by weight of a polyalphaolefin based synthetic oil, about 0.05 parts by weight of a miscible biocide, and about 20 parts by weight of manganese linoleate.

4,585,463

CONCENTRATOR AND FEEDER OF SLUDGE FOR SYSTEM TO RECOVER RESOURCES FROM SLUDGE

Yasuo Hirose, Yokohama, Japan, assignor to Nippon Furnace Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 415,963, Sep. 8, 1982, Pat. No. 4,507,127. This application Jan. 7, 1985, Ser. No. 689,105

Claims priority, application Japan, Dec. 21, 1981, 56-205251; Dec. 21, 1981, 56-205252; Dec. 21, 1981, 56-205253; Mar. 23, 1982, 57-044553; Mar. 23, 1982, 57-044554; May 25, 1982, 57-087296

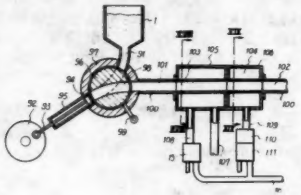
The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.[4] C02F *11/12;* F23G *5/04;* F26B *9/06*

U.S. Cl. 48—111 3 Claims

1. A sludge concentration apparatus for recovering resources from sludge comprising a sludge supply means and at least one dehydration means, said sludge supply means adapted to push sludge out into feed means for conveying to said dehydration means including a heat conductive pipe means connected to a ventilating porous pipe means, a first jacket covering said heat conductive pipe means, a heating gas feed pipe

means and an exhaust pipe means fitted to the said first jacket, a second jacket covering said ventilating porous pipe means,



suction pipe means fitted to said second jacket whereby gaseous fuel products may be recovered.

4,585,464

LOW MOISTURE ABSORPTION ABRASIVE BRISTLE OF POLYBUTYLENE TEREPHTHALATE

John C. Haylock, Dennysville, Me.; Peter R. Saunders, Richmond, Va; Garland L. Turner, Chesterfield, Va., and Ian C. Twilley, Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 514,740, Jul. 18, 1983, abandoned. This application May 20, 1985, Ser. No. 736,414

Int. Cl.⁴ C09K *3/14*

U.S. Cl. 51—298 **6 Claims**

1. A bristle material comprised of a thermoplastic matrix and an abrasive filler material dispersed therein;

(a) said bristle material having a diameter ranging from about 0.02 to 0.09 inches

(b) said thermoplastic matrix consisting essentially of polybutylene terephthalate having an intrinsic viscosity of at least about 0.60; and

(c) said abrasive filler being present in an amount of about 5 to about 50 weight percent based on the total weight of the bristle.

4,585,465

METHOD FOR CAUSING BUBBLES IN A FLUID TO COALESCE

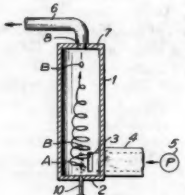
Ryushi Suzuki; Joji Yamaga, both of Tokyo; Kunio Matsui, and Hiroaki Tsuchiya, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 410,826, Aug. 23, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,657

Claims priority, application Japan, Aug. 26, 1981, 56-133768

Int. Cl.⁴ B01D *19/02*

U.S. Cl. 55—52 **2 Claims**



1. A method for causing bubbles in a fluid to coalesce into a coherent mass by use of a vessel having a vertical cylindrical space therein, comprising causing the fluid to flow tangentially into said cylindrical space through an inflow port near a closed lower inflow end of said cylindrical space to form a spiral vortex flow thereof near the inflow port and directing said fluid flow in the cylindrical space axially to an upper outflow end of the cylindrical space, thereby causing transformation of said spiral vortex flow into an axial flow, the inflow velocity of said fluid being sufficient to establish a pressure differential in which pressure along the axis of the cylinder rises from said lower inflow end toward said upper outflow end, thereby causing the bubbles to resist, by virtue of said axial pressure differential, the fluid flow and move toward said inflow end and coalesce without buoyancy into a coherent mass at an area near the axis of the vortex and between an area close to the point of inflow and the point of highest pressure, and removing the bubbles from the area at which they coalesce.

4,585,466

CYCLONE SEPARATORS

Nicholas Syred, Cardiff; Martin Biffin, Pontyclun, both of Wales, and Ieuan Owen, Hoylake, England, assignors to Coal Industry (Patents) Limited, London, England

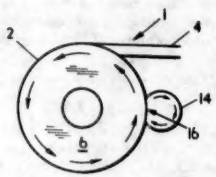
PCT No. PCT/GB82/00305, § 371 Date Jun. 10, 1983, § 102(e) Date Jun. 10, 1983, PCT Pub. No. WO83/01584, PCT Pub. Date May 11, 1983

PCT Filed Oct. 27, 1982, Ser. No. 506,549

Claims priority, application United Kingdom, Oct. 27, 1981, 8132302

Int. Cl.⁴ B01D *45/12*

U.S. Cl. 55—349 **12 Claims**



1. A cyclone separator including a body defining a main vortex chamber therewithin having a main vortex therein during operation, an inlet in the body for a contaminated fluid, an outlet for the fluid, an outlet for the contaminant, wherein the invention comprises a secondary vortex chamber in communication with an opening into the main vortex chamber at the periphery thereof, the secondary vortex chamber being closed at the top and bottom thereof and having an outlet openable periodically for removal of contaiminants whereby in use no net fluid flow into or out of the secondary vortex chamber occurs, both the main and secondary vortex chambers being circular in horizontal cross section with the main chamber being of larger diameter, the main and secondary chambers lying in the relationship of overlapping circles with the opening between the chambers occupying the area of overlap and being unobstructed said main vortex, said chamber overlapping and said opening comprising a means for generating a vortex in the secondary chamber, the opening thus having a "V" shape along its vertical edge when viewed in said horizontal cross section with the edge of the "V" comprising a means for shearing off the dust particles from the vortex of the main chamber and directing them into the secondary chamber.

4,585,467
PLUNGER SUITABLE FOR USE IN A GLASSWARE FORMING MACHINE

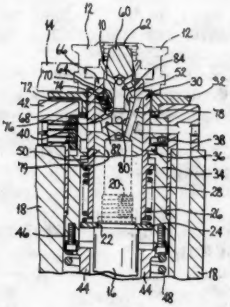
Albert J. Trahan, Vernon, Conn., and Vladimir Vajda, Nussbaumen, Switzerland, assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 22, 1985, Ser. No. 714,781

Claims priority, application United Kingdom, Apr. 6, 1984, 8408998

Int. Cl.⁴ C03B *11/10*

U.S. Cl. 65—172 **3 Claims**



1. A plunger suitable for use in a glassware forming machine in forming parisons of molten glass for subsequent formation into an article of glassware, the plunger comprising a base portion adapted to be mounted on a piston rod of a piston and cylinder assembly to be moved by operation of the assembly into or out of a mould cavity in which the parison is formed, the base portion defining a recess which, when the base portion is mounted on a piston rod as aforesaid, opens towards the mould cavity, the plunger also comprising a tip portion having a surface arranged to engage molten glass in the mould cavity, and a projection which is adapted to be received in the recess of the base portion, wherein the base portion and the projection of the tip portion co-operate, when the projection of the tip portion is received in the recess of the base portion, in defining a generally cylindrical passage extending, from an opening at a point where the tip portion emerges from the recess into the base portion and the projection of the tip portion, the portion of the wall of the passage which is defined by the base portion being formed with screw threads and and the portion of the wall of the passage which is defined by the projection terminating in a lip of the projection which extends substantially transversely across a portion of the passage, and the plunger also comprising an externally-screw threaded member adapted to be inserted into the passage so that the thread of the member engages the threads of the wall of the passage so that the member is retained in the passage and the member engages the lip so that the member acts to retain the projection in the recess and hence the tip portion on the base portion.

4,585,468
APPARATUS FOR MANUFACTURING A DISCHARGE LAMP ENVELOPE HAVING MULTIPLE CONSTRICTIONS

Rudolph V. Marcucci, Beverly, and Robert Y. Pai, Hamilton, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 6, 1984, Ser. No. 678,957

Int. Cl.⁴ C03B *27/04*

U.S. Cl. 65—277 **6 Claims**

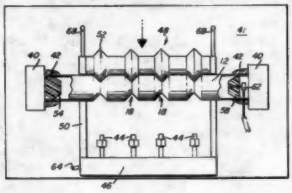
1. Apparatus for manufacturing a fluorescent lamp envelope of substantially round configuration in cross-section and having a plurality of constricting portions each having a predetermined cross-sectional shape and being axially shaped apart and extending substantially about the circular periphery of said envelope and projecting therein, said apparatus comprising:

means for holding said envelope;

a plurality of heat sources;

means for providing relative rotation between said envelope and said plurality of heat sources with the heat therefrom acting on substantially narrow axially spaced regions on said envelope;

means for engaging said envelope and for forming said plurality of constricting portions at said axially spaced regions on said envelope, said forming means comprises a forming tool having a plurality of protrusions axially spaced apart and extending outwardly from said forming tool, said protrusions having a cross-sectional shape substantially equal to said predetermined cross-sectional shape of said constricting portions;



means for moving said forming means in a direction normal to said envelope to engage said envelope;

means for applying a positive pressure within said envelope while said forming means is engaged with said envelope.

4,585,469
SUPPORT FOR A MOULD PORTION OF A GLASSWARE FORMING MACHINE

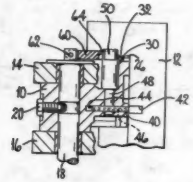
Hermann H. Nebelung, Zurich, Switzerland, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Mar. 20, 1985, Ser. No. 713,971

Claims priority, application United Kingdom, Mar. 28, 1984, 8408042

Int. Cl.⁴ C03B *11/06*

U.S. Cl. 65—359 **9 Claims**



1. A support for a mould portion of a glassware forming machine, the support comprising at least one upwardly-facing surface in which there is a recess so arranged that a mould portion can be mounted on the support by positioning a hook portion of the mould portion, which projects transversely of a body portion of the mould portion, above the upwardly-facing surface, and lowering the hook portion relative to the support thereby bringing the hook portion into engagement with the upwardly-facing surface and a downward projection of the hook portion into the recess so that the mould portion hangs on the support supported by the hook portion, the support also comprising a projection arranged to enter a downwardly-opening slot in the mould portion, as the mould portion is lowered as aforesaid, and to prevent the mould portion from moving transversely of the support by engagement with opposite walls of the slot, wherein the support also comprises a locking member mounted for movement between an operative position thereof, in which it projects over an upwardly-facing

surface of a mould portion mounted on the support and prevents upwards movement of the mould portion relative to the support, and an out-of-the-way position thereof, in which it is clear of said surface of the mould portion, and moving means for moving the locking member between its operative and out-of-the-way positions.

4,585,470

HERBICIDAL AZOBENZENESULFONAMIDES

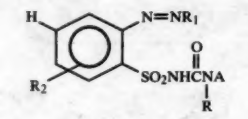
Wallace C. Petersen, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 13, 1984, Ser. No. 650,188

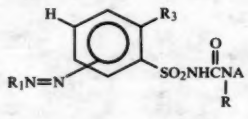
Int. Cl.[4] C07D *239/42, 239/47;* A01N *47/36*

U.S. Cl. 71—87 **21 Claims**

1. A compound of Formulae I or II



I



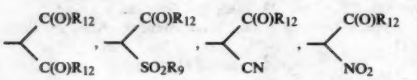
II

wherein

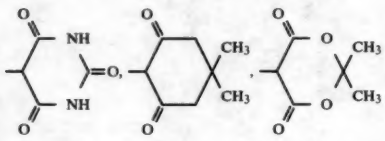
R is H or CH_3;

R_1 is NR_4R_5, $N(CH_3)OR_6$, NHCN, NRA, $P(W)R_4(W_1R_5)$, $P(W)(W_1R_4)(W_2R_5)$, $P^+(C_6H_5)_3$, $P^+R_6R_7R_8$, SR_9, SO_2R_9, $C(R_{10})(R_{11})NO_2$, $CH(CN)_2$ or Q;

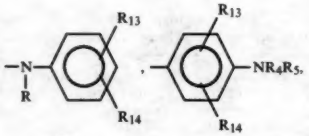
Q is



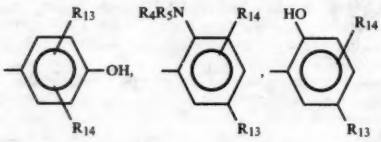
Q-1 Q-2 Q-3 Q-4



Q-5 Q-6 Q-7



Q-8 Q-9



Q-10 Q-11 Q-12

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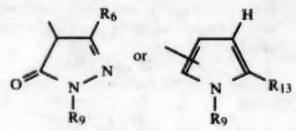


Q-13 Q-14

R_2 is H, F, Cl, Br, OCH_3, OC_2H_5, OCF_2H, SCH_3, $N(CH_3)_2$, NO_2, CH_3 or CF_3;

R_3 is H, F, Cl, Br, C_1–C_4 alkyl, CO_2R_{15}, NO_2, CF_3, C_1–C_4 alkoxy, C_1–C_4 alkylthio, $SO_2NR_{16}R_{17}$, C_1–C_4 alkylsulfonyl, C_1–C_4 haloalkoxy, C_1–C_4 alkylsulfonyloxy, C_2–C_5 alkoxyalkyl or C_3–C_4 alkenyloxy;

R_4 and R_5 are independently C_1–C_4 alkyl, C_2–C_4 alkyl substituted by 1 atom of Br or 1–3 atoms of F or Cl, C_3–C_5 alkenyl, C_3–C_5 cycloalkyl, OH, OCH_3, CH_2OH, CH_2OR_6, or $CH_2CH_2OR_6$; or

R_4 and R_5 may be taken together as $—(CH_2)_4—$, $—(CH_2)_5—$ or $—(CH_2)_2O(CH_2)_2—$;

R_6 is C_1–C_4 alkyl;

R_7 and R_8 are independently C_1–C_4 alkyl;

R_9 is C_1–C_4 alkyl, phenyl or phenyl substituted with 1–3 atoms of F, Cl or 1Br;

R_{10} and R_{11} are independently H, C_1–C_4 alkyl, phenyl or phenyl substituted with 1 atom of Br or 1–3 atoms of F or Cl;

R_{12} is C_1–C_4 alkyl, C_1–C_4 alkoxy or NHR_9;

R_{13} and R_{14} are independently H, C_1–C_3 alkyl, OR_6, SR_6, $NHC(O)R_6$, F, Cl, Br or CO_2R_6;

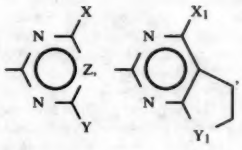
R_{15} is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

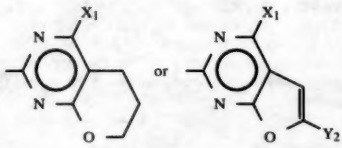
R_{16} and R_{17} are independently C_1–C_2 alkyl;

W is O or S;

W_1 and W_2 are independently O, S or NH;

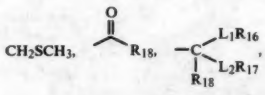
A is





X is CH_3, OCH_3, OCH_2CH_3, Cl, F, Br, I, OCF_2H, CH_2F, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3 or CF_3;

Y is H, C_1–C_3 alkyl,, OCH_3, OC_2H_5, CH_2OCH_3, $NHCH_3$, $N(OCH_3)CH_3$, $N(CH_3)_2$, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $CH_2OCH_2CH_3$, $OCH_2CH_2OCH_3$,



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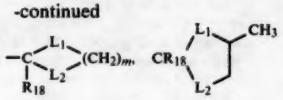


OCF_2H, SCF_2H or cyclopropyl;

m is 2 or 3;

L_1 and L_2 are independently O or S;

R_{18} is H or CH_3;

Z is CH;

Y_1 is O or CH_2;

X_1 is CH_3, OCH_3, OC_2H_5 or OCF_2H; and

Y_2 is H or CH_3;

provided that

(a) when X is Cl, F, Br or I, then Y is OCH_3, OC_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H; and

(b) when Q is Q-11 or Q-12, then R_{13} is other than H;

and their agriculturally suitable salts.

4,585,471

NOVEL SUBSTITUTED 5-TRIFLUOROMETHYL-1,3,4-THIADIAZOL-2-YL-OXY-ACETIC ACID AMIDE HERBICIDES

Heinz Förster, Wuppertal, Fed. Rep. of Germany; Wolfgang J. Hofer, deceased, late of Wuppertal, Fed. Rep. of Germany (by Erika Irene Hofer, heir); Robert R. Schmidt, Bergisch-Gladbach, and Ludwig Eue, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

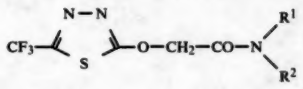
Continuation of Ser. No. 490,900, May 5, 1983, abandoned. This application May 10, 1985, Ser. No. 733,662

Claims priority, application Fed. Rep. of Germany, May 15, 1982, 3218482

Int. Cl.[4] A01N *43/82;* **C07D** *285/12, 417/12*

U.S. Cl. 71—90 **20 Claims**

1. A sustituted 5-trifluoromethyl-1,3,4-thiadiazol-2-yl-ocyacetic acid amide of the formula



in which

R^1 is C_1–C_5-alkyl, or allyl, and

R^2 is C_1–C_5-alkyl, allyl, or phenyl which is optionally substituted by up to 3 methyl, chlorine, fluorine, trifluoromethyl and/or methoxy radicals or

R^1 and R^2, together with the nitrogen atom to which they are bonded, form a 1,2,3,4-tetrahydro-quinolyl radical with the proviso that R^1 is not methyl when R^2 is phenyl.

18. A method of combating unwanted vegetation which comprises applying to such vegetation or to a plot in which such vegetation is to be grown a herbicidally effective amount of a compound according to claim 1.

4,585,472

1,2,4,6-THIATRIAZINE 1,1-DIOXIDE ETHERS AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

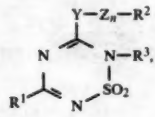
Continuation of Ser. No. 524,661, Aug. 19, 1983, abandoned. This application May 6, 1985, Ser. No. 729,902

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1982, 3231394

Int. Cl.[4] A01N *43/72;* **C07D** *401/12, 413/12, 417/12*

U.S. Cl. 71—91 **8 Claims**

1. A 1,2,4,6-thiatriazine, 1,1-dioxide ether of the formula



(I)

where R^1 is hydrogen, a saturated or unsaturated straight-chain or branched aliphatic radical of not more than 10 carbon atoms or a saturated, straight-chain or branched aliphatic radical of not more than 10 carbon atoms which is substituted by halogen, alkoxy or alkylmercapto of 1 to 4 carbon atoms, or is monoalkylamino or dialkylamino where alkyl is of 1 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms or a radical R^4—X—, where R^4 has the meanings given for R^1, with the exception of monoalkylamino and dialkylamino, and X is oxygen, sulfur, —SO— or —SO_2, R^2 is a 6-membered aromatic heterocyclic radical having 1 to 2 nitrogen atoms as ring members and is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, nitro or halogen, or is a 5-membered aromatic heterocyclic radical which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, nitro or halogen and has 1, 2 or 3 heteroatoms selected from the group consisting of oxygen, sulfur or nitrogen, with the proviso that the rings have no more than one oxygen or one sulfur atom, or is a 5-membered or 6-membered benzofused aromatic heterocyclic radical which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, cyano, nitro or halogen and has 1,2 or 3 heteroatoms selected from the group consisting of oxygen, sulfur or nitrogen, with the proviso that the rings have no more than one oxygen or one sulfur atom and n is 0, R^3 is hydrogen, a saturated or unsaturated, straight-chain or branched aliphatic radical of not more than 10 carbon atoms which is substituted by halogen or alkoxy of 1 to 4 carbon atoms, or is cycloalkyl of 3 to 7 carbon atoms, Y is oxygen, sulfur, —SO—, or —SO_2—, Z is alkylene of 1 to 4 carbon atoms or —$(CH_2)_2$—O—CH_2—, —$(CH_2)_2O$— or —CH_2—CO—, and n is 0 or 1.

4,585,473

METHOD FOR MAKING RARE-EARTH ELEMENT CONTAINING PERMANENT MAGNETS

Kalatur S. V. L. Narasimhan, Monroeville, and Edward J. Dulis, Pittsburgh, both of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

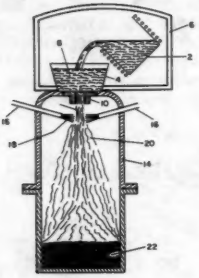
Filed Apr. 9, 1984, Ser. No. 598,118

Int. Cl.[4] C22C *1/04*

U.S. Cl. 75—0.5 C **18 Claims**

1. A method for making rare-earth permanent magnets, said method comprising producing a molten mass of a rare-earth magnet alloy, maintaining said molten mass in a protective atmosphere while introducing said molten mass into a chamber having a protective atmosphere and a bottom portion containing a cryogenic liquid cooling medium, cooling and collecting

said molten mass in said bottom portion to form a solidified mass, removing said solidified mass from said chamber, comminuting said solidified mass to produce particles and compacting said particles into a magnet body.



4,585,474

METHOD OF AND PREALLOY FOR THE PRODUCTION OF TITANIUM ALLOYS

Hermann Andörfer, Fürth, Fed. Rep. of Germany, assignor to GfE Gesellschaft fur Elektrometallurgie mbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 15, 1984, Ser. No. 621,040

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1984, 3409615

Int. Cl.⁴ C22B *4/00*; C21C *7/00*

U.S. Cl. 75—10 V **12 Claims**

1. A method of making a titanium alloy containing titanium and, as alloying elements, tin, zirconium, molybdenum and aluminum, said method comprising the steps of:

(a) forming a masteralloy of the following composition:

10 to 12% by weight tin,

21 to 23% by weight zirconium,

32 to 34% by weight molybdenum, less than 0.5% by weight unavoidable impurities, and balance aluminum;

(b) producing a melting electrode from said masteralloy; and

(c) melting titanium in a vacuum-electric-arc furnace utilizing said melting electrode to form a titanium alloy melt and casting the titanium alloy melt to form a titanium alloy containing all of said elements as alloying elements of the titanium alloy and at least some of said elements in relative proportions in the titanium alloy corresponding to their relative proportions by weight in said masteralloy.

4,585,475

METHOD FOR RECYCLING OILY MILL SCALE

Donald R. Fosnacht, Merrillville, Ind., assignor to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 162,818, Jun. 25, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 314,107

Int. Cl.⁴ C21C *7/068*

U.S. Cl. 75—51.2 **12 Claims**

1. A method for recycling oily mill scale particles recovered from steel manufacturing operations, said method comprising the steps of:

providing oily mill scale particles recovered from steel manufacturing operations;

separating from said oily mill scale those particles larger than 3/16 in. (4.76 mm.);

mixing the particles remaining after said separating step with a binder selected from the group consisting of (1) a binder comprising molasses and hydrated lime and (2) a binder comprising lignosulfonate;

agglomerating said mixture of particles and binder into agglomerated shapes having a composition consisting essentially of said particles and said binder;

said mixing and agglomerating steps comprising providing said agglomerated shapes with a green strength sufficient to permit the use of said agglomerated shapes in a steel refining operation without aging;

providing a bath of molten steel containing excess carbon;

refining said bath of molten steel, using an oxygen blow;

utilizing said agglomerated shapes to provide a coolant for, and to oxidize said excess carbon in, the molten steel by adding said agglomerated shapes to said bath of molten steel, in conjunction with said refining step using said oxygen blow, while the bath contains excess carbon;

all of the agglomerated shapes so utilized being added to the bath of molten steel;

said adding step being performed after said agglomerating step;

said agglomerated shapes having a density which facilitates penetration by said shapes of any layer of slag which may overlie said molten steel;

there being no deoiling or grinding steps performed on said oily mill scale particles prior to said adding step;

said bath of molten steel having a temperature during said refining step which will flash off the oil in said oily mill scale, thereby preventing said oil from acting as a carbonaceous reductant in said bath of molten steel;

all of said steps, recited prior to the recitation of said step of providing a bath of molten steel, being conducted under ambient condtions of temperature, pressure and atmosphere.

4,585,476

METHOD FOR PRODUCING LIQUID STEEL FROM IRON ORE

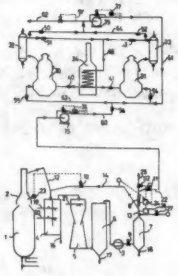
Arturo Lazcano-Navarro; Antonio Villasenor-Mejía; Miguel A. Alcántara, and Jorge Fernández-Garcia, all of Saltillo, Mexico, assignors to Instituto Mexicano de Investigaciones Siderurgicas, Saltillo, Mexico

Filed Aug. 20, 1984, Ser. No. 642,101

Claims priority, application Mexico, May 9, 1984, 201281

Int. Cl.⁴ C21C *5/38*

U.S. Cl. 75—59.17 **6 Claims**



1. A method for producing liquid steel from iron ore which comprises supplying said ore in lump or pellet form to two batch reactors, working the reactors in alternate reduction and cooling cycles, passing into the batch reactors an ascendant cool stream of reducing gas in the cooling cycle and an ascendant hot stream of reducing gas in the reducing cycle, recycling a part of the gas product of the reduction and adding fresh reducing gas for use as a cooling gas in the cooling cycle and as a reducing gas for the reducing cycle, generating said fresh reducing gas in a converter that works in a batch form and is loaded with sponge iron product of said reduction of iron ore and then is injected with carbon, oxygen, fluxes and cooling gas through the bottom to achieve the melting and

refining of sponge iron and the generation of reducing gases, sealing said converter with a retractable bell during heating and retiring it to load the converter, and after completion of the batch when reducing gas is not generated, unloading sponge iron from the iron ore reduction batch reactor when the cooling cycle is over, loading said reactor again with iron ore, feeding the obtained sponge iron to the converter, and starting new melting and refining cycles in the converter and new cooling and reduction cycles in the iron ore reduction reactors.

4,585,477

METHOD FOR SEPARATING AND RECOVERING NICKEL AND COPPER FROM COMPLEX MATERIALS

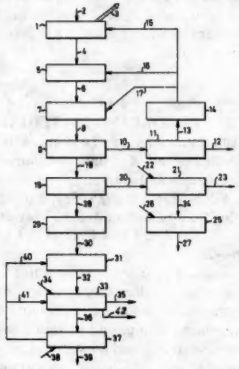
Thomas K. Miöen, Stockholm, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Continuation of Ser. No. 539,628, Oct. 6, 1983, abandoned, which is a continuation of Ser. No. 403,649, filed as PCT SE81/00334, Nov. 13, 1981, published as WO82/01725, May 27, 1982, §102(e), date Jul. 15, 1982, abandoned. This application Feb. 11, 1985, Ser. No. 699,506

Claims priority, application Sweden, Nov. 17, 1980, 8008053

Int. Cl.[4] C22B *15/00, 23/00*

U.S. Cl. 75—117 **15 Claims**



1. A method of recovering copper and nickel from sulphidic minerals containing copper, nickel and iron, comprising roasting said minerals and then sulphating the roasted minerals in separate stages, and leaching the sulphated material and recovering copper from the leaching solution, characterized by returning all or part of the nickel content of the leaching solution to the roasting stage as nickel sulphate, at least partially transforming said returned nickel content to nickel oxide by splitting off in said roasting stage substantially simultaneously with transforming of any nickel sulphide content of said minerals to nickel oxide by roasting in said roasting stage, delivering said nickel oxide and any remaining nickel sulphate to the sulphating stage; and by recovering the nickel content in the form of an oxide, together with the leaching residue.

4,585,478

HEAT RESISTING STEEL

Takatoshi Yoshioka; Seishin Kirihara; Masao Siga, all of Hitachi; Mitsuo Kuriyama, Ibaraki; Takehiko Yoshida, and Takanori Murohoshi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1984, Ser. No. 607,288

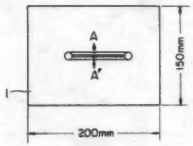
Claims priority, application Japan, May 6, 1983, 58-78182

Int. Cl.[4] C22C *38/06, 38/28, 38/50*

U.S. Cl. 75—124 **25 Claims**

1. A heat resisting steel exhibiting a 600° C., 10^5-hour creep rupture strength higher than 8 Kg/mm^2 and having a composition consisting essentially of 0.05 to 0.2 wt% of C, 0.5 to 2.0 wt% of Cr, 0.5 to 2.0 wt% of Mo, 0.05 to 0.5 wt% of V, 0.002 to 0.1 wt% of Al, 0.0002 to 0.0030 wt% of B, 0.045 to 0.15 wt% of Ti and the balance substantially Fe and inevitable impurities, wherein the ratio Ti/Al between the Al content and the Ti content is from 0.8 to 14 and the sum of $\overline{X}$ and $\overline{Al}$ as obtained from the following formulae is not greater than 2920:

$$X = 10P + 5Sb + 4Sn + As$$



$$Al = xAl$$

(x being a coefficient obtained from FIG. 4)

where P, Sb, Sn and As represent the contents of P, Sb, Sn and As contained as said inevitable impurities in terms of ppm, while Al represents the Al content in terms of ppm.

4,585,479

WELDING MATERIAL OF FERRITE-AUSTENITE TWO-PHASE STAINLESS STEEL AND METHOD OF APPLICATION

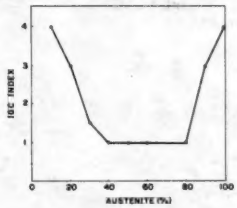
Masahiro Aoki; Kiichi Saito; Takeshi Yoshida; Noriyasu Ikeda; Masanori Takahashi, all of Jyouetsu; Masao Okubo, and Masaaki Nagayama, both of Niihama, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka and Nippon Stainless Steel Co., Ltd., Tokyo, both of, Japan

Filed Feb. 16, 1984, Ser. No. 580,667

Claims priority, application Japan, Feb. 17, 1983, 58-25190

Int. Cl.[4] C22C *38/40*

U.S. Cl. 75—128 N **7 Claims**



1. A welding material of ferrite-austenite two-phase stainless steel consisting essentially of not more than 0.03% of C, not more than 2.0% of Si, not more than 2.0% of Mn, 25 to 30% of Cr, 7 to 12% of Ni, about 0.1 to 0.35% of N, and the balance Fe and inevitable impurities, wherein the Ni balance value given by the following formula ranges between −11.7 and −6.7:

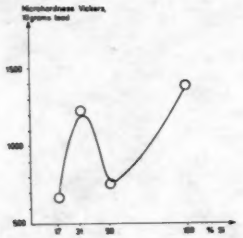
$$\text{Ni balance value} = -\text{Ni\%} + 0.5 \times \text{Mn\%} + 30 \times (\text{C} + \text{N}) - 1.1(\text{Cr\%} + 1.5 \times \text{Si\%}) + 8.2$$

4,585,480

MATERIAL FOR THE POWDER METALLURGICAL MANUFACTURE OF SOFT MAGNETIC COMPONENTS

Jan Tengzelius, Viken; Sten-Ake Kvist, Höganäs, and Patricia Jansson, Viken, all of Sweden, assignors to Höganäs AB, Höganäs, Sweden

Filed Apr. 3, 1985, Ser. No. 719,554
Claims priority, application Sweden, Apr. 3, 1984, 8401824
Int. Cl.[4] B22F 1/00
U.S. Cl. 75—255 3 Claims



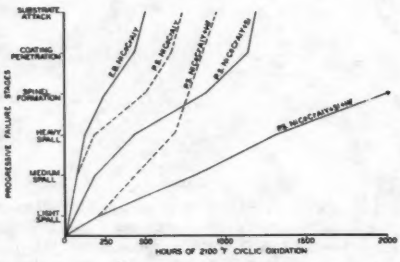
1. A silicon containing iron powder for the production of sintered soft magnetic parts with low tool-wear required for production of said parts, comprising a high purity atomised iron powder with a particle size less than 147 μm with good compactability in which is intimately mixed a high purity atomised ferrosilicon powder with a particle size less than 147 μm in such proportions that the level of silicon content is less than 8%, said ferrosilicon powder having a silicon content of between 45 and 55%.

4,585,481

OVERLAYS COATING FOR SUPERALLOYS

Dinesh K. Gupta, Vernon, and David S. Duvall, Cobalt, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 289,952, Aug. 5, 1981, Pat. No. 4,419,416.
This application Aug. 22, 1983, Ser. No. 525,184
Int. Cl.[4] C04B 9/02
U.S. Cl. 106—14.05 14 Claims



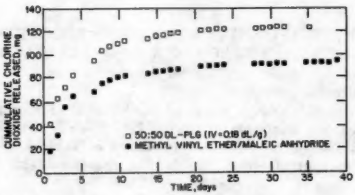
1. A coating composition suited for the protection of metallic substrates against high temperature oxidation and corrosion consisting essentially of 5–40% Cr, 8–35% Al, 0.1–2.0% of an oxygen active element selected from the Group IIIB elements including the lanthanides and the actinides, and mixtures thereof, 0.1–7.0% Si and 0.1–2.0% Hf balance selected from the group consisting of Ni, Co and mixtures thereof.

4,585,482

LONG-ACTING BIOCIDAL COMPOSITIONS AND METHOD THEREFOR

Thomas R. Tice, Birmingham; William E. Meyers, Helena; Richard M. Gilley, Birmingham, and William M. Shannon, Birmingham, all of Ala., assignors to Southern Research Institute, Birmingham, Ala.

Filed May 25, 1984, Ser. No. 614,231
Int. Cl.[4] C09D 5/14
U.S. Cl. 106—15.05 16 Claims



1. A long-acting biocidal composition comprising a chlorine dioxide-liberating compound and sufficient hydrolyzable organic acid-generating polymer to lower the pH of said composition to less than about 7, said organic acid-generating polymer being present in a form whereby it is released gradually in the presence of water.

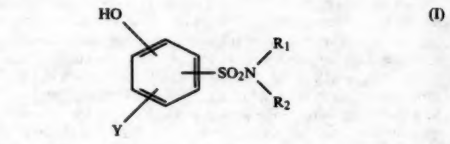
4,585,483

RECORDING MATERIALS

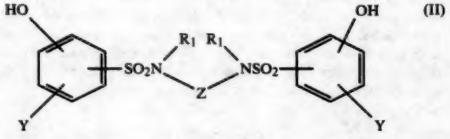
Kensuke Ikeda, Shizuoka; Ken Iwakura, and Masato Satomura, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 21, 1984, Ser. No. 612,218
Claims priority, application Japan, May 20, 1983, 58-88937
Int. Cl.[4] C09D 11/00
U.S. Cl. 106—21 20 Claims

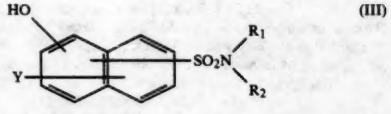
1. A pressure-sensitive or heat-sensitive recording material comprising an electron donating colorless dye and an electron accepting compound, wherein the electron accepting compound is an aromatic compound having a substituted or unsubstituted sulfamoyl group and a hydroxyl group as substituents, wherein the electron accepting compound is a compound represented by one of the general formulae (I) to (III):



(I)



(II)



(III)

wherein R_1 and R_2 independently represent a hydrogen atom, an alkyl group, an aralkyl group or an aryl group, which may be substituted by alkyl groups, halogen atoms, alkoxy groups or hydroxyl groups;

Y is a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, a halogen atom, a hydroxyl group or an electron attractive group;

Z is an alkylene residue, an arylene residue or —R_3—X—R_4— (wherein R_3 and R_4 independently represent an alkylene residue, and X is an arylene residue or an oxygen atom.

4,585,484

RECORDING LIQUID

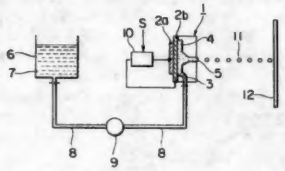
Masahiro Haruta, Funabashi; Tadayuki Nakousai, Atsugi; Kazuo Iwata, Urawa, and Keiko Nakousai, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1984, Ser. No. 591,556

Claims priority, application Japan, Mar. 24, 1983, 58-49436; Mar. 24, 1983, 58-49437; Mar. 24, 1983, 58-49438

Int. Cl.[4] C09D *11/00*

U.S. Cl. 106—22 25 Claims



25. A recording liquid comprising (1) a recording agent selected from the group consisting of C.I. Direct Blue 199, C.I. Direct Yellow 86, C.I. Food Black 2 and mixtures thereof and (2) a liquid medium for dissolving or dispersing said recording agent therein, said liquid medium comprising at least:

(a) either one or both of polyethylene glycol and polyethylene glycol monomethyl ether,

(b) either one or both of diethylene glycol and sulfolane,

(c) either one or both of n-methyl-2-pyrrolidone and 1,3-dimethyl-2-imidazolidinone, and

(d) water.

4,585,485

REFRACTORY SLIDING NOZZLE PLATE

Hiroshi Shikano, 3-24-6 Hiyoshidai, Yaha a Nishi-Ku, and Tsutomu Harada, 1612-4 Ohaza Kumade, Yahata Nishi-Ku, both of Kyushu, Japan

Filed Jan. 24, 1983, Ser. No. 460,464

Int. Cl.[4] C04B *35/48, 35/52*

U.S. Cl. 106—38.9 10 Claims

1. A refractory sliding nozzle plate for use in casting of molten metal, based on the weight of said refractory, comprising,

(A) 5–90% by weight of refractory material consisting of corundum and monoclinic zirconia as principal mineral phase and having the composition including 80–98% by weight of Al_2O_3 and 2–20% by weight of ZrO_2 based on the weight of said refractory material;

(B) 1–10% by weight of silicon-containing powder containing at least 80% by weight of silicon based on the weight of said powder and having a particle size less than and up to 100 mesh; and

(C) 1–15% by weight of carbon powder containing at least 80% by weight of fixed carbon based on the weight of siad carbon powder and having a particle size less than and up to 100 mesh.

4,585,486

PROCESS FOR PLACING CEMENT COMPOSITION HAVING HIGH STRENGTH

Keiichi Fujita, Tokyo; Hiroshi Nakauchi; Tatsuo Kita, both of Ichikawa; Yoshiki Nakagawa, and Terunobu Maeda, both of Urawa, all of Japan, assignors to Hazama-Gumi, Ltd., Tokyo, Japan

Filed Jul. 10, 1984, Ser. No. 629,305

Int. Cl.[4] C04B *21/00*

U.S. Cl. 106—86 17 Claims

1. A process for placing a cement composition having high strength comprising the steps of: adding a viscosity increasing agent to a cement to prepare a cement composition containing said viscosity increasing agent; vacuum de-bubbling said cement composition containing said viscosity increasing agent under a reduced pressure to remove relatively large bubbles present in said cement composition and to leave therein only fine bubbles so that 98 vol% or more of the total sum volume of all of the bubbles left after the vaccum de-bubbling are composed of the sum volume of the bubbles each having foam size of not more than 120 microns; and then allowing the defoamed cement composition to be hardened.

4,585,487

FILIFORM ELEMENTS USABLE FOR REINFORCING MOLDABLE MATERIALS, PARTICULARLY CONCRETE

Xavier P. Destree, Av. des Noisetiers 39, Brussels B-1170, and Angelo A. Lazzari, Av. W. Churchill 224, Brussels B-1180, both of Belgium

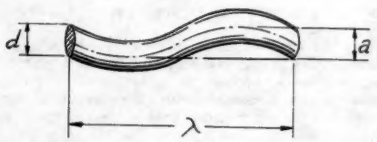
PCT No. PCT/BE83/00023, § 371 Date Aug. 29, 1984, § 102(e) Date Aug. 29, 1984, PCT Pub. No. WO84/02732, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 21, 1983, Ser. No. 648,158

Claims priority, application Belgium, Dec. 30, 1982, 209834

Int. Cl.[4] C04B *7/02*

U.S. Cl. 106—99 3 Claims



1. Fiber of steel wire usable for reinforcing moldable materials particularly concrete, said fiber having uniform wave shaped corrugations distributed over its length, with the following features:

maximum wave amplitude	1 to 1.5 d
maximum wave-length	10 d
minimum wave-length	7 d
maximum fiber length	65 d
minimum fiber length	45 d
fiber diameter (d)	max. 1.2 mm
nature of the steel: ultimate tensile strength higher than and lower than	110 kg/mm^2 150 kg/mm^2.

4,585,488

METHOD FOR DISINFECTING CONTACT LENSES

Günter Giefer, Heusenstamm, Fed. Rep. of Germany, assignor to Ciba Vision Care Corporation, Atlanta, Ga.

Filed Dec. 20, 1982, Ser. No. 451,562

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150638

Int. Cl.[4] A61L *2/18;* G02C *13/00*

U.S. Cl. 134—27 4 Claims

1. A method for decomposing residual hydrogen peroxide adhering to a contact lens following sterilization of the lens with hydrogen peroxide and thereby rendering said lens suitable for wearing without any further sterilization or decomposition of hydrogen peroxide which comprises contacting said lens with an aqueous isotonic solution of dissolved catalase in an amount sufficient to decompose the residual hydrogen peroxide adhering to the lens.

4,585,489

METHOD OF CONTROLLING LIFETIME OF MINORITY CARRIERS BY ELECTRON BEAM IRRADIATION THROUGH SEMI-INSULATING LAYER

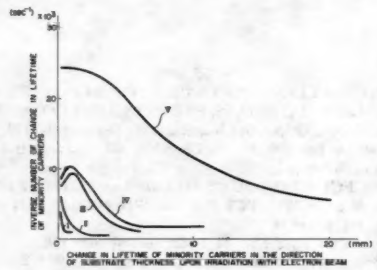
Shun-ichi Hiraki, Hyogo; Kazuo Tsuru, Yokohama; Yoshikazu Usuki, Chigasaki, and Yutaka Koshino, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 7, 1984, Ser. No. 648,138

Claims priority, application Japan, Sep. 26, 1983, 58-177381

Int. Cl.[4] H01L *21/265*

U.S. Cl. 148—1.5 4 Claims



1. A method of controlling the lifetime of minority carriers by electron beam irradiation through a semi-insulating layer, comprising the steps of:

forming the semi-insulating layer on a semiconductor substrate having at least one rectifying junction; and

irradiating the semiconductor substrate with an electron beam through the semi-insulating layer so as to control the lifetime of the minority carriers contained in the semiconductor substrate.

4,585,490

METHOD OF MAKING A CONDUCTIVE PATH IN MULTI-LAYER METAL STRUCTURES BY LOW POWER LASER BEAM

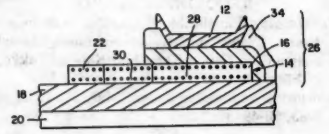
Jack I. Raffel; John A. Yasaitis, both of Lexington; Glenn H. Chapman, Bedford, and Mark L. Naiman, Lincoln, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 328,356, Dec. 7, 1981, abandoned. This application Oct. 3, 1984, Ser. No. 657,128

Int. Cl.[4] H01L *21/265;* B23K *27/00*

U.S. Cl. 148—1.5 3 Claims

1. The process for forming an electrically conductive path between a first metal layer and a second metal layer in an integrated circuit device which comprises providing a substrate, a layer of base oxide on said substrate, a first metal layer on at least a portion of said base oxide having at least one first main conductive path, at least one first link point portion and at least one bridge portion extending between said first main conductive path and said link point portion, a layer of link insulator selected from the group consisting of amorphous germanium, amorphous silicon undoped polysilicon and polycrystalline germanium overlying at least said first link point portion, a second metal layer overlying said link insulator at a second link point portion at least in a region that also generally overlies said first link point portion to form a link point and



including at least one second main conductive path and at least one bridge portion extending between said second means conductive path and said second link point, and an insulating metal diffusion barrier layer between said link insulator layer and each of said first metal layer and said second metal layer, and

exposing the second metal layer of said link point to a laser pulse between about one and about three watts for a time period between about 0.01 and about 10 milliseconds to effect alloying between the first metal, said second metal and the link insulator material.

4,585,491

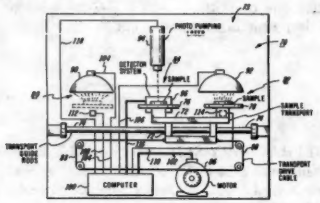
WAVELENGTH TUNING OF QUANTUM WELL LASERS BY THERMAL ANNEALING

Robert Burnham, Palo Alto, Calif., and Nick Holonyak, Jr., Urbana, Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1983, Ser. No. 528,766

Int. Cl.[4] H01L *21/265, 21/208*

U.S. Cl. 148—1.5 24 Claims



1. The method of tuning the emission wavelength of a quantum well laser structure to a shorter emission wavelength comprising the steps of thermal annealing said structure and monitoring the emission wavelength thereof until the desired primary emission wavelength is achieved.

4,585,492

RAPID THERMAL ANNEALING OF SILICON DIOXIDE FOR REDUCED HOLE TRAPPING

Zeev A. Weinberg, White Plains, and Donald R. Young, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1984, Ser. No. 635,391

Int. Cl.[4] H01L *21/265;* B23K *27/00*

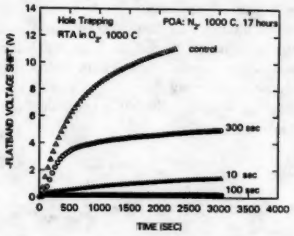
U.S. Cl. 148—1.5 5 Claims

1. A process for enhancing electronic properties in a thin silicon dioxide insulating layer on an integrated circuit wafer

characterized by

(a) positioning the wafer inside an enclosure;

(b) charging said enclosure with flowing oxygen; and



(c) quickly heating the wafer by radiation heating to a temperature of approximately 1000 C. for 10–300 seconds.

4,585,493

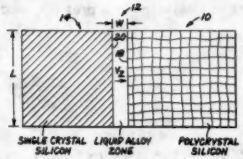
GRAIN-DRIVEN ZONE-MELTING OF SILICON FILMS ON INSULATING SUBSTRATES

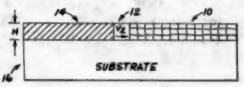
Thomas R. Anthony, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

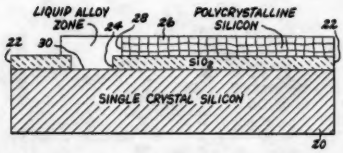
Filed Jun. 26, 1984, Ser. No. 615,403

Int. Cl.[4] H01L *21/36, 21/40*

U.S. Cl. 148—171 **23 Claims**







1. The method of forming a single crystal silicon layer on a silicon oxide insulator layer which comprises;

forming a silicon oxide insulator layer on a single crystal silicon wafer disc base and forming a slit window in the silicon oxide insulator layer to expose the upper surface of the single crystal silicon wafer disc;

forming a polycrystalline silicon layer on the silicon oxide insulator layer;

seeding the polycrystalline silicon layer from the single crystal silicon wafer disc base by forming a melt zone with a eutectic alloying agent aligned with said slit window;

heating the single crystal silicon wafer disc and the silicon oxide insulator layer and the polycrystalline silicon layer to an isothermal temperature substantially below the melting point of the silicon but above the melting point of the eutectic;

maintaining the isothermal temperature at a level to cause the melt zone to advance into the polycrystalline silicon layer,

and to cause a single crystal silicon layer to form from the polycrystalline silicon layer at the trailing edge of the melt zone; and

cooling the single crystal silicon wafer disc base and the silicon oxide insulator layer and the single crystal silicon layer after the polycrystalline silicon layer has been converted to a single crystal silicon layer.

23. The method of forming single crystal layers on insulating substrates at high production rates which comprises

forming an insulating layer on a single crystal silicon wafer,

forming a number of slit windows through said insulating layer to expose said single crystal silicon wafer,

depositing a polycrystalline silicon layer on said insulating layer and through the windows thereof,

disposing a eutectic forming metal on said polycrystalline layer over said window,

heating the resulting structure to melt the polycrystalline silicon occupying said windows into a eutectic composition, and

continuing to heat said structure to convert the polycrystalline silicon layer to a single crystal silicon layer.

4,585,494

BETA COPPER BASE ALLOY ADAPTED TO BE FORMED AS A SEMI-SOLID METAL SLURRY AND A PROCESS FOR MAKING SAME

Sankaranarayanan Ashok, Bethany, and John F. Breedis, Trumbull, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 598,960, Apr. 11, 1984, Pat. No. 4,555,272. This application Jun. 28, 1985, Ser. No. 749,834

Int. Cl.[4] C22C *9/01*

U.S. Cl. 148—435 **8 Claims**

1. A predominately beta phase copper base alloy adapted for forming in a semi-solid slurry condition, said alloy having a microstructure comprising discrete particles contained in a matrix having a lower melting point than said particles, said alloy consisting essentially of from about 9% to about 10.5% by weight aluminum, at least about 10% by weight nickel and the balance essentially copper.

4,585,495

STABLE NITRATE/SLURRY EXPLOSIVES

Gordon R. Honeyman, North Bay, Canada, and James H. Owen, II, Jefferson City, Mo., assignors to Du Pont of Canada, Inc., Mississauga, Canada and E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Mar. 11, 1985, Ser. No. 710,542

Int. Cl.[4] C06B *45/00*

U.S. Cl. 149—2 **16 Claims**

1. A storage-stable explosive composition comprising a sensitized blend formed by combining inorganic nitrate particles and an aqueous slurry comprising a thickened aqueous solution of an inorganic oxidizing salt, said slurry's water content and viscosity being restricted so as to make said slurry at once flowable and water-retentive, said slurry constituting about from 5 to 60 percent, and said nitrate particles about from 95 to 40 percent, of said blend by weight.

4,585,496

METHOD OF PRODUCING HIGH-DENSITY SLURRY/PRILL EXPLOSIVES IN BOREHOLES AND PRODUCT MADE THEREBY

Gordon R. Honeyman, North Bay, Canada, and James H. Owen, II, Jefferson City, Mo., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1985, Ser. No. 710,543
Int. Cl.[4] C06B *45/02*
U.S. Cl. 149—21 **23 Claims**

1. A method of producing a high-density slurry/prill explosive in a borehole comprising

(a) feeding into a pressure vessel a granular mass of essentially free-flowing slurry-bearing ammonium nitrate (AN) prills, said slurry borne by said prills being an aqueous slurry containing at least one inorganic oxidizing salt in aqueous solution, and the amount of slurry in said granular mass being about 25 percent or less of the weight thereof; and

(b) conveying said slurry-bearing prills out of said vessel through a loading hose into a borehole by air at a pressure of at least about 200 kPa, whereby a tightly packed mass of crushed and whole slurry-bearing prills is deposited in said borehole.

4,585,497

METHOD OF SEALING CONTAINERS USING HEAT SEALABLE CAP STOCK

William R. Webster, Fredericksburg, Va., assignor to Allied Paper Incorporated, Kalamazoo, Mich.

Filed Nov. 2, 1983, Ser. No. 547,943
Int. Cl.[4] B32B *31/12*
U.S. Cl. 156—69 **12 Claims**

1. A method for glue-free application of cap stock to cylindrical paperboard containers comprising the steps of

(a) passing flat, cut, circular blanks of said cap stock to a forming die, each of said blanks comprising a paperboard substrate, a slip release coating applied to one side of the substrate, and a thermoplastic, vinyl chloride ethylene copolymer having amide functionality applied to the other side of said substrate, said copolymer having a vinyl chloride to ethylene ratio in the range of about 75:25 to about 85:15;

(b) forming said blanks into the shape of a shallow cup;

(c) placing said blanks over an open end of said container; and

(d) heat sealing the overlapping surfaces of said container and blanks by the application of an effective amount of heat thereto, said vinyl chloride ethylene copolymer being present at a coat weight effective to achieve a moisture vapor transmission rate in the cap stock of less than about 5 grams/100 sq. inches/24 hours;

wherein the vinyl chloride ethylene copolymer forms a bond having an adherence to the container wall effective to cause fiber tear in the container wall before bond rupture, said paperboard containers being uncoated.

4,585,498

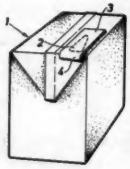
METHOD FOR SEALING AN EMPTYING OPENING AND AN ARRANGEMENT FOR THE REALIZATION OF THE METHOD

Jan E. R. Lagerstedt, Malmö, and Bengt-Arne Arnspang, Lund, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Dec. 12, 1984, Ser. No. 680,819
Claims priority, application Sweden, Dec. 15, 1983, 8306939
Int. Cl.[4] B65B *7/28*; B65D *17/50*
U.S. Cl. 156—69 **8 Claims**

1. A method for sealing two thermoplastic layers on an emptying opening provided in a packing material, said thermoplastic layers located on opposite sides of the opening and sealed to each other by means of heat and pressure including the steps of: positioning one of said two layers against the remaining layer of fluid pressure, heating the two layers in a first heating region and a second heating region, intensifying the heating in the second heating region to a substantially higher degree than the first heating region substantially concurrently with said positioning.

5. An arrangement for sealing two thermoplastic layers on an emptying opening provided in a packing material, said thermoplastic layers located on opposite sides of the opening and sealed to each other by means of heat and pressure, comprising: a heating device defining a first working surface; a



support tool provided with a second working surface, said first working surface being movable towards and away from said second working surface, said heating device defining a limited heating zone and being heatable within said zone, the limited heating zone including two heating regions; a first heating region spaced from the emptying opening and a second heating region, said second heating region defining an area of intensive heating so as to heat the thermoplastic layers to a substantially higher degree than said first heating region, the heating device provided with a fluid passage for a pressure medium.

4,585,499

METHOD OF PRODUCING CERAMICS

Syunzo Mase, Ama, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 31, 1984, Ser. No. 636,359
Claims priority, application Japan, Aug. 9, 1983, 58-144476
Int. Cl.[4] B32B *18/00, 31/26*; C04B *37/02*
U.S. Cl. 156—89 **15 Claims**

1. A method of producing ceramics comprising the steps of:

preparing a powder consisting essentially of zirconia;

calcining said powder at a temperature of 200°–1,200° C. for at least one hour;

dry grinding said powder

forming a non-aqueous slurry of the dry ground powder;

shaping said non-aqueous slurry into a body; and

firing the shaped body at a temperature greater than 1,100° C.

4,585,500
METHOD OF MANUFACTURING A REINFORCED COMPOSITE STRUCTURE OF CERAMIC MATERIAL

Louis Minjolle, Tarbes; Claudette Drouet, Juillan; Bernard Lengronne, Monségur; Alain Hordonneau, Saint Aubin de Medoc, and Bernard Capdepuy, Saint Medard en Jalles, all of France, assignors to Ceraver, Paris, France

Filed Nov. 28, 1984, Ser. No. 675,593

Claims priority, application France, Dec. 1, 1983, 83 19208

Int. Cl.⁴ C04B *35/58, 35/65, 35/76*

U.S. Cl. 156—89 **4 Claims**

1. A method for manufacturing an aluminum nitride matrix composite structure not requiring the input of said nitride, said structure being of a ceramic material reinforced with refractory fibers, comprising preparing a slurry containing aluminum powder, a synthetic resin and an organic for said resin; introducing refractory fibers selected from the group consisting of alumina, silicon carbide, short mullite, pure silica, silicon nitride and boron nitride fibers and whiskers into said slurry; removing the liquid phase from said slurry by drying to form a structure; firing the formed structure to remove the synthetic resin; then subjecting the structure to nitriding of the aluminum powder to form aluminum nitride and sintering the nitrided structure without particular gas pressure and under temperature conditions such that the refractory fibers are not damaged.

4,585,501
METHOD OF USE OF CORRUGATING ADHESIVE COMPOSITION FOR ADHERING NORMALLY ABHERENT SURFACES

Steven D. Overholt, Eagan, Minn., assignor to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 605,464, Apr. 30, 1984. This application Jul. 15, 1985, Ser. No. 755,372

Int. Cl.⁴ C08L *89/00;* **C09D** *3/06;* **C09J** *3/06, 3/12*

U.S. Cl. 156—205 **5 Claims**

1. A method for adhesively bonding adjoining surfaces of a fluted medium and a paperboard liner to form corrugated board, which comprises applying a corrugating adhesive comprising:

(a) about 40 to about 60 weight percent water;

(b) about 12 to about 25 weight percent raw corn or wheat starch and about 1.5 to about 6 weight percent cooked corn or wheat starch;

(c) about 15 to about 30 weight percent of a carboxylated styrene-butadiene copolymer latex as a 50 weight percent solids emulsion;

(d) about 0.8 to about 2.5 weight percent casein;

(e) about 0.1 to about 1.0 weight percent of a thickener and

(f) about 0.5 to about 1.0 weight percent glyoxal

to said liner or to the tips of said fluted medium.

4,585,502
PROCESS FOR PRODUCING PRINTED CIRCUIT BOARD

Nobuo Uozu; Hiroyoshi Yokoyama, and Yoichi Matsuda, all of Tochigi, Japan, assignors to Hitachi Condenser Co., Ltd., Tokyo, Japan

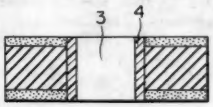
Filed Feb. 14, 1985, Ser. No. 701,533

Claims priority, application Japan, Apr. 27, 1984, 59-85396; May 2, 1984, 59-88956; May 9, 1984, 59-92106; May 22, 1984, 59-103375; Jun. 26, 1984, 59-131459; Jun. 29, 1984, 59-134195; Jul. 31, 1984, 59-161320; Jul. 31, 1984, 59-161321

Int. Cl.⁴ B32B *31/00;* **B05D** *5/12;* **B44C** *1/22;* **C23F** *1/00*

U.S. Cl. 156—278 **10 Claims**

1. In a process for producing a printed circuit board by forming a circuit on an insulating substrate having through holes by electroless plating, the improvement comprising forming an adhesive layer containing a catalyst for plating on one side or both sides of the insulating substrate, forming through holes in the substrate, and forming a thermosetting



resin layer on the internal walls of the through holes before an electroless plating treatment.

4,585,503
HEAT-TREATMENT OF WRAPPERS IN CIGARETTE PACKING MACHINES AND THE LIKE

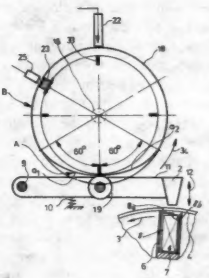
Nils von Wichert, and Jürgen Steinhauer, both of Glinde, Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,798

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237687

Int. Cl.⁴ B30B *15/34;* **B32B** *35/00*

U.S. Cl. 156—351 **11 Claims**



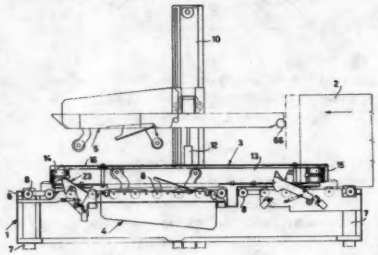
1. In a machine for securing parts of wrappers or the like to each other, particularly in a packing machine for processing cigarette packs having wrappers of heat-sealable material, the combination of means for intermittently transporting a succession of wrappers along a predetermined path at any one of a plurality of different speeds; a securing tool adjacent to a predetermined portion of said path; and means for maintaining said tool in an operative position with reference to successive wrappers in said portion of said path for identical intervals of time during successive periods of idleness of said transporting means, comprising displacing means actuatable to move said tool to the operative position with reference to a wrapper in said portion of said path, said displacing means comprising a rotary cam, drive means operable to actuate said displacing means, and control means for operating said drive means independently of the speed of said transporting means during successive perids of idleness of said transporting means, said control means comprising a plurality of signal generators arranged to generate signals for influencing said drive means and an analog function generator having input means connected with said signal generators and output means connected to said drive means, said drive means comprising a variable-speed motor and said signal generators including a signal generator arranged to generate a stop signal in a predetermined position of said displacing means and to thereby effect a stoppage of said motor by way of said function generator, said signal generators including a further signal generator arranged to generate a decelerating signal in a predetermined angular position of said cam and to thereby effect a reduction of the speed of said motor by way of said function generator during each revolution of said cam prior to generation of the stop signal.

4,585,504

SELF-SIZING TAPING MACHINE FOR CARTONS

Augusto Marchetti, Piazza Sicilia, 7, 20146 Milano, Italy

Filed Jan. 23, 1985, Ser. No. 694,149
Claims priority, application Italy, Jan. 26, 1984, 19325 A/84
Int. Cl.[4] G05G *15/00*
U.S. Cl. 156—351 **3 Claims**



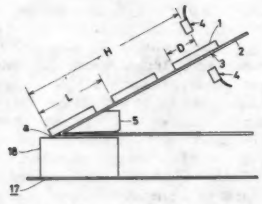
1. Self-sizing taping machine for cartons, comprising a support and advancement base for the cartons, a pair of conveying units with driven belts extending along opposite sides of said base and approachable to each other for a conveying engagement with the carton sides, an upper taping head superimposed to said base in vertically movable way for the introduction of the cartons to be taped and sensing members able to control the movement of said upper taping head and of said conveying units according to the position of the cartons along an advancement path from one end to the other end of said support base, characterized in that said sensing members are inserted in said support base and comprise, near the inlet end of the machine, a first sensing member for controlling the momentary lifting and the subsequent lowering of the upper taping head and a second sensing member for subsequent controlling the mutual approach of the conveying units and, near the outlet end of the machine, a third sensing member for controlling the further moving away of the conveying units, said first and second sensing members including a first and second valve means, with which a first lever cooperates, which is resiliently urged to a rest position, in which said first lever projects above the carton support plane, but is able to attain, upon engagement with a carton bottom wall, first and second working positions for the corresponding operation of said first and second valve means.

4,585,505

PRESSURE SENSITIVE LABEL APPLICATION DEVICE

Yutaka Matsuguchi, Osaka, Japan, assignor to Osaka Sealing Printing Co., Ltd., Osaka, Japan

Filed Oct. 28, 1983, Ser. No. 546,528
Claims priority, application Japan, Oct. 30, 1982, 57-191618
Int. Cl.[4] B65H *26/00*
U.S. Cl. 156—361 **3 Claims**



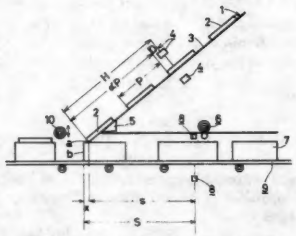
1. A pressure sensitive label application device comprising:
a backing material on which a plurality of labels are temporarily and releasably adhered at a predetermined pitch in the longitudinal direction thereof;
feeding means for feeding said backing material in the longitudinal direction thereof;
a label applying station formed in a feeding path of said backing material for stripping said label from said backing material and for applying the stripped label to an article;
label sensing means disposed on the upstream side of said label applying station in said feeding path of said backing material for sensing an edge of said label on said backing material;
first setting means for setting data related to a distance (D) between said label sensing means and an edge of the nearest label thereto when a label is present in said label applying station;
fed amount detecting means for detecting a fed amount (d) of said backing material in response to an output of said label sensing means;
first commanding means for applying a stop command to said feeding menas to stop feeding of said backing material if and when said fed amount (d) becomes equal to said distance (D) set by said first setting means;
second commanding means for applying a start command to said feeding means if and when said article reaches said label applying station;
said first setting means includes:
input means capable of inputting numerical data, and
storing means for storing said numerical data inputted by said input means;
second setting means for setting data related to a distance (H) between said label sensing means and an edge of said label present at said label applying station;
third setting means for setting data related to a pitch (L) of said plurality of labels on said backing material; and
said first setting means includes computing means for solving an equation ($D=H-\alpha L; L \geqq D$, where α is an integer) based on said data (H) and (L) from said second and third setting means to evaluate said data related to said distance (D).

4,585,506

PRESSURE SENSITIVE ADHESIVE LABEL AFFIXING DEVICE

Yutaka Matsuguchi, Osaka, Japan, assignor to Osaka Sealing Printing Co., Ltd., Osaka, Japan

Filed Dec. 6, 1983, Ser. No. 558,439
Claims priority, application Japan, Dec. 3, 1982, 57-213215
Int. Cl.[4] B65H *26/00*
U.S. Cl. 156—361 **13 Claims**



1. A pressure sensitive adhesive label affixing device comprising:
a label affixing station for affixing a label to an article;
article carrying means for carrying said article to said label affixing station;
article sensing means disposed in a transferring path of said article at the upstream side of said label affixing station for sensing an edge of said article;
first setting means for setting data related to a distance (S)

between said article sensing means and the presence of the edge of the article at said label affixing station;

detecting means for detecting that said article is carried by said distance (S) by said article carrying means in response to an output of said article sensing means;

label supplying means for supplying said label to said label affixing station in response to the detection of said detecting means;

second setting means for setting data related to a distance (s) between said label affixing station and said article sensing means; and

third setting means for setting data related to a distance (x) between said edge of said article and the position where said label is to be affixed; wherein

said first setting means includes computing means for solving the equation (S=s+x) based on said data (s) and (x) to evaluate said data related to said distance (S).

4,585,507

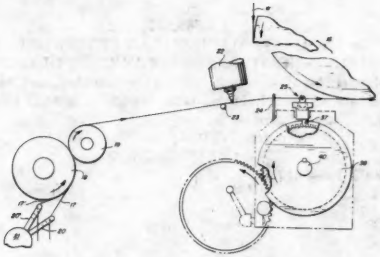
APPARATUS FOR MAKING ELASTIC DIAPERS

John J. Bradley, and John R. Merkatoris, both of Green Bay, Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 565,227, Dec. 27, 1983, Pat. No. 4,543,141. This application Apr. 1, 1985, Ser. No. 718,234

Int. Cl.[4] A61F *13/16*

U.S. Cl. 156—461 **7 Claims**



1. Apparatus for applying an elastic ribbon to a web in the manufacture of disposable diapers and the like comprising a frame and means on said frame for advancing said web toward a ribbon uniting station,

a source for said ribbon operably associated with said frame,

means on said frame for advancing said ribbon from said source along a predetermined path toward and into said station,

adhesive applying means in said path for applying a continuous stripe of adhesive to said ribbon,

oscillator fork means on said frame in said path between said adhesive applying means and said station arranged to selectively fold said ribbon on itself at longitudinally spaced portions to selectively prevent adherence of said ribbon portions to said web, said web advancing means and said ribbon advancing means being so related as to develop tension in said ribbon at said uniting station.

4,585,508

APPARATUS FOR TRANSVERSE SEALING LAYERS OF ELONGATED THERMOPLASTIC MATERIAL

Dennis W. Ehlers, Green Bay, Wis., assignor to Paper Converting Machine Co., Green Bay, Wis.

Filed Oct. 26, 1984, Ser. No. 665,054

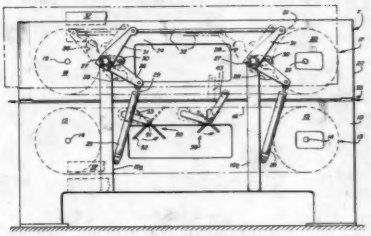
Int. Cl.[4] B30B *5/06*

U.S. Cl. 156—494 **6 Claims**

1. Apparatus for transversely sealing layers of elongated thermoplastic material comprising a relatively elongated frame defining the side of a longitudinally extending path for horizontally advancing said layers in superposed relation,

upper and lower longitudinally extending cross bar conveyors movably mounted on said frame and including parallel chains, sprockets and cross bars and with each conveyor having an upper run and a lower run, the lower run of said upper conveyor and the upper run of said lower conveyor defining respectively the top and bottom of said path,

a plurality of sealing platens mounted on said cross bars between the chains of each conveyor transverse of said



path, said sealing platens being arranged to clamp said layers, said

layer stretching and jogging means mounted on said frame adjacent said path, said means including a shaft mounted on said frame, a plurality of vane means extending radially of said shaft, and means for rotating said shaft in synchronism with the movement of said conveyors.

4,585,509

AUTOMATIC LAMINATOR

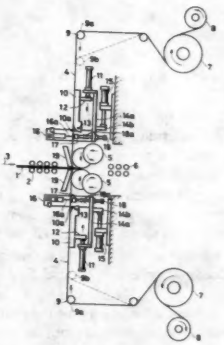
Toshio Obayashi, Tokyo, Japan, assignor to Somar Corporation, Tokyo, Japan

Filed Sep. 28, 1984, Ser. No. 655,840

Claims priority, application Japan, Sep. 29, 1983, 58-179275

Int. Cl.[4] B32B *31/10, 31/18, 31/20*

U.S. Cl. 156—497 **9 Claims**



1. An automatic laminator for depositing segments cut from a web onto a base panel, comprising:

a main vacuum bail having a first surface extending parallel to a conveying direction of said web and perpendicular to a conveying direction of said base panel for selectively holding a portion of said web;

a secondary vacuum bail disposed generally between said main vacuum bail and said base panel for positioning a leading end of said web at an end of said main vacuum bail which is closest to said base panel;

first moving means for moving said main vacuum bail in a direction perpendicular to said base panel;

second moving means for moving said secondary vacuum bail in a direction parallel to said base panel;

third moving means for moving both said first moving means and said second moving means in said direction perpendicular to said base panel;

a pair of heated rolls for press sealing a segment of said web to said base panel; and

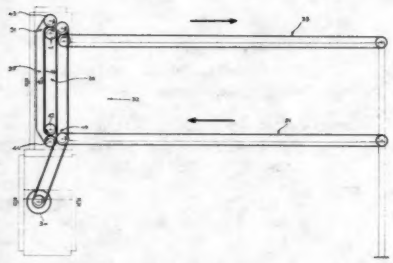
a nozzle plate disposed adjacent an inlet to a nip formed by said heated rolls for guiding said web segment onto said base panel.

4,585,510

FUSING MACHINE

Constantin Hadjiskakis, Nutley, N.J., and Mario Monoco, 4 Sand Rd., Fairfield, N.J. 07006, assignors to Mario Monaco, Fairfield, N.J.

Filed Sep. 10, 1982, Ser. No. 416,624
Int. Cl.[4] B31F *5/00*
U.S. Cl. 156—555 **70 Claims**



1. A machine for applying heat and pressure to flat articles comprising

heat and pressure applying apparatus including an entrance disposed for receiving articles delivered to the apparatus in a first direction transverse to the vertical and an exit vertically spaced from the entrance for discharging articles in a second direction transverse to the vertical,

a feed conveyor having a moving conveyor surface for delivering articles to the entrance of the heat and pressure applying apparatus, the moving surface of the feed conveyor extending generally in said first transverse direction,

a discharge conveyor having a moving conveyor surface for receiving articles discharged from the exit of the heat and pressure applying apparatus, the moving surface of the discharge conveyor extending generally in said second transverse direction and disposed substantially in vertical alignment with the moving surface of the feed conveyor,

said feed conveyor and said discharge conveyor being exposed for a substantial distance and vertically spaced so that one or more operators adjacent said conveyors may both deposit articles on said feed conveyor and remove articles from said discharge conveyor, at least the moving surfaces of the upper of the feed and discharge conveyors being substantially transparent, so that an operator can better view the lower of the feed and discharge conveyors while depositing articles on or removing articles from the lower conveyor.

4,585,511

METHOD OF GROWING GALLIUM ARSENIDE CRYSTALS USING BORON OXIDE ENCAPSULANT

Roelof P. Bult, Fruitvale; Ted E. Schroeder, Trail, and James G. Needham, Rossland, all of Canada, assignors to Cominco Ltd., Vacouver, Canada

Filed Jul. 22, 1983, Ser. No. 516,030
Int. Cl.[4] C30B *27/02*
U.S. Cl. 156—607 **2 Claims**

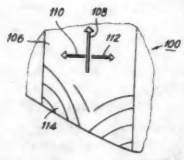
1. In the method of producing undoped semi-insulating GaAs single crystals by growth from a melt covered with a laer of boron oxide as encapsulant, the improvement which comprises covering the melt with boron oxide which contains water in a predetermined amount in the range of about 250 to 600 ppm, bulk annealing the GaAs single crystals at a temperature in the range of about 750° to 900° C. for a period of time in the range of about 30 to 120 minutes, whereby the uniformity of the bulk annealed crystals with respect to the electrical characteristics is improved and whereby the GaAs single crystals so produced are stable and have a resistivity in the range of about 1×10^6 to 7×10^7 ohm cm, which resistivity does not decrease upon heat treatment of wafers cut from GaAs crystals so produced, said heat treatment being carried out at 750° to 900° C. for 30 to 120 minutes in a hydrogen atmosphere, the ratio between the resistivity of the GaAs wafers before and after said heat treatment being in the range of about 0.8:1.0 to 1.2:1.0.

4,585,512

METHOD FOR MAKING SEED CRYSTALS FOR SINGLE-CRYSTAL SEMICONDUCTOR DEVICES

Yoshinori Hayafuji; Akashi Sawada; Setsuo Usui, and Akikazu Shibata, all of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 27, 1984, Ser. No. 574,537
Int. Cl.[4] C30B *13/22*
U.S. Cl. 156—617 R **39 Claims**



1. A method of forming a single crystal in a region of a polycrystalline or amorphous layer on a substrate, the method comprising:

melting a region of a polycrystalline or amorphous layer on a substrate with a strip beam of electrons; and

solidifying said molten region from one end of said region in a first direction and outwardly toward the edges of said region in a second direction substantially normal to said first direction.

4,585,513

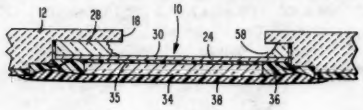
METHOD FOR REMOVING GLASS SUPPORT FROM SEMICONDUCTOR DEVICE

Michael T. Gale, Wettswil; Martin Ebnöther, Affoltern a.Albis, and Helmut Schuetz, Zurich, all of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Jan. 30, 1985, Ser. No. 696,465
Int. Cl.[4] B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—630 **13 Claims**

1. A method of removing at least a portion of a glass support mounted on and secured to one surface of a thin substrate of single crystalline silicon which has a semiconductor device along its other surface which method comprises the steps of

(a) securing a backing plate over at least a portion of the other surface of the silicon substrate,
(b) applying a protective material over the other surface of the silicon substrate and the backing plate, and then



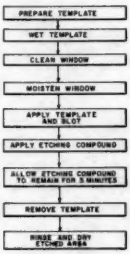
(c) etching away the glass support until the one surface of the silicon substrate is exposed.

4,585,514

METHOD OF APPLYING THEFT-DETERRENT INDICIA

L. Joe Scallan, Cincinnati, Ohio, assignor to Pro-Guard, Inc., Covington, Ky.

Filed Oct. 24, 1984, Ser. No. 664,426
Int. Cl.[4] B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—631 **6 Claims**



1. A method of applying identifying indicia to an automobile window comprising the steps of:
(a) preparing a template with the desired idetification indicia by cutting a sheet of a coated non-woven nitrocellulose stencil paper resistant to seepage of acid therethrough with the said indicia utilizing an electric typewriter having type with side walls that slope relative to the typing surface, the electric typewriter forming openings in said stencil sheet corresponding to said indicia;
(b) wetting said template;
(c) cleaning the window area to be etched;
(d) moistening said window area;
(e) pressing the template against said window area and removing excess moisture from the template;
(f) brushing a thin layer of an etching compound containing sodium bifluoride and ammonium bifuloride over said template;
(g) allowing the etching compound to remain for a predetermined time;
(h) thereafter removing said template from the window; and
(i) rinsing and drying said etched window area.

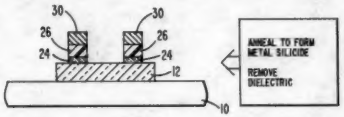
4,585,515

FORMATION OF CONDUCTIVE LINES

Jer-shen Maa, Plainsboro Township, Middlesex County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 11, 1985, Ser. No. 710,284
Int. Cl.[4] H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—643 **12 Claims**

1. A process of forming conductive lines on a substrate having topographical features comprising:
(a) depositing a layer of planarizing dielectric material on the substrate;
(b) forming a patterned layer of resist material over the layer of dielectric material wherein the exposed portion of the dielectric layer overlies topographical features on the substrate;
(c) etching away the exposed dielectric layer;
(d) removing the remaining resist layer;
(e) depositing a layer of doped silicon over the structure;



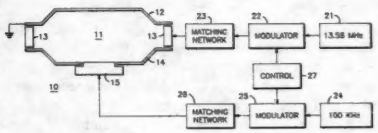
(f) isotropically etching the silicon layer thereby removing it from the surface of the dielectric layer leaving only a portion thereof in the openings in the dielectric layer;
(g) depositing a metal to overlie the silicon in said openings;
(h) annealing the structure to convert the metal to metal silicide; and
(i) removing the remaining dielectric layer.

4,585,516

VARIABLE DUTY CYCLE, MULTIPLE FREQUENCY, PLASMA REACTOR

Glenn R. Corn, Sausalito, and Andreas G. Hegedus, Albany, both of Calif., assignors to Tegal Corporation, Novato, Calif.

Filed Mar. 4, 1985, Ser. No. 707,639
In†. Cl.[4] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 **7 Claims**



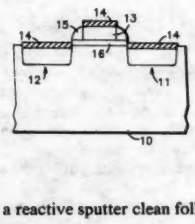
3. A process for treating semiconductor wafers in a plasma reactor comprising the steps of:
applying a high frequency signal to a plasma reactor chamber;
applying a low frequency signal to said plasma reactor chamber;
supplying a reactant gas to said chamber; and
modulating at least one of said signals so that the duty cycle of the signal is less than one hundred percent.

4,585,517

REACTIVE SPUTTER CLEANING OF SEMICONDUCTOR WAFER

Donald K. Stemple, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1985, Ser. No. 696,936
Int. Cl.[4] B44C *1/22*; C03C *15/00*; C23C *15/00*; C03C *25/06*
U.S. Cl. 156—643 **5 Claims**



1. A method for a reactive sputter clean followed by a sput-

ter deposition of a metal on a semiconductor wafer, comprising the steps of;

loading the semiconductor wafer into a sputter deposition system containing an argon atmosphere;

adding a CF_4 gas to the argon atmosphere; activating the sputter system and etching the residual oxide from select regions on the semiconductor wafer;

stopping the flow of CF_4 to the sputter system after a predetermined time while maintaining the argon atmosphere; and

sputter depositing a metal on the semiconductor wafer.

4,585,518

METHOD OF MANUFACTURING SHADOW MASK

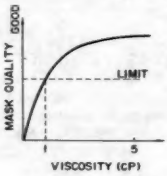
Yasuhisa Ohtake, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 21, 1985, Ser. No. 714,551

Claims priority, application Japan, Mar. 26, 1984, 59-56353

Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—644 **9 Claims**



1. A method of manufacturing a shadow mask, comprising the steps of: forming an etching-protective film having a pattern of a number of apertures on a surface of a thin metal plate containing iron and nickel as major components; and etching said thin metal plate using an etching solution with a viscosity of 1 to 5 centipoise (cP) so as to form a number of apertures in said thin metal plate.

4,585,519

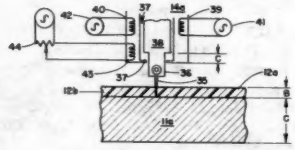
AUTOMATED CHEMICAL MILLING PROCESS

Herbert R. Jaffe, Plainview, and Irwin Mitzelman, Wantagh, both of N.Y., assignors to Grumman Aerospace Corporation, New York, N.Y.

Filed Feb. 10, 1983, Ser. No. 465,518

Int. Cl.[4] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—645 **25 Claims**



1. An automated chemical milling process for metals, said process comprising the steps of:

a. coating the metal to be etched with a resist coating;

b. digitizing the area(s) to be etched to define x,y coordinate values for the perimeter of the area(s) to be etched;

c. automatically scribing the metal and coating with a scribing tool, said scribing tool cutting through said coating along the perimeter defined by the x,y coordinate values;

d. removing the resist coating from the area(s) to be etched; and

e. immersing said partially coated metal into an etching solution for a predetermined period of time to remove a predetermined amount of metal from the uncoated area(s);

4,585,520

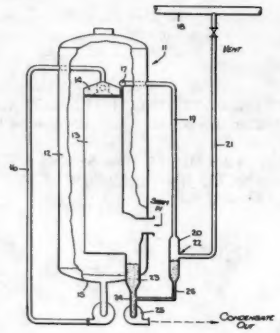
METHOD AND APPARATUS FOR CLOSING THE VENT OF AN EVAPORATOR

Axel E. Rosenblad, Monmouth Hills, N.J., assignor to Rosenblad Corporation, Princeton, N.J.

Filed Apr. 18, 1983, Ser. No. 485,607

Int. Cl.[4] B01D *1/10, 1/22, 1/30*

U.S. Cl. 159—47.1 **3 Claims**



1. A method of closing the vent line of an evaporator for preventing water hammer and condensation shock in the evaporator, in which the evaporator is of the type in which heating steam is introduced near the evaporator bottom, condensate condensed from said heating steam is collected, and uncondensed steam is vented through said vent line, comprising leading condensate to a chamber interposed in said vent line, which chamber has an outlet at a predetermined level below the point at which steam is introduced into the evaporator for closing said vent line when the actual level of condensate rises higher than said predetermined level in said chamber, thereby preventing the introduction into the evaporator of further heating steam at a level submerged below the condensate surface.

4,585,521

WASTE HEAT REMOVAL SYSTEM FOR REGENERATIVE COKE OVEN BATTERIES HAVING SIDE BURNERS

Friedrich Thiersch; Manfred Strobel, and Heinz-Leo Dahlkamp, all of Recklinghausen, Fed. Rep. of Germany, assignors to Firma Carl Still GmbH & Co. KG, Fed. Rep. of Germany

Filed May 21, 1984, Ser. No. 612,360

Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318347

Int. Cl.[4] C10B *5/12*

U.S. Cl. 202—141 **3 Claims**

1. A waste heat removal system for a regenerative coke oven battery having side burners and a plurality of regenerators, the coke oven battery having a pusher side and an opposite coke side both lying on longitudinal sides of the coke oven battery, said coke oven battery also having opposite longitudinal ends, the waste heat removal system comprising:

a plurality of parallel laterally spaced longitudinal channels of substantially equal cross-section defined in said battery at spaced lateral locations between said coke side and said pusher side, said longitudinal channels extending over substantially the entire length of the battery below the plurality of regenerators;

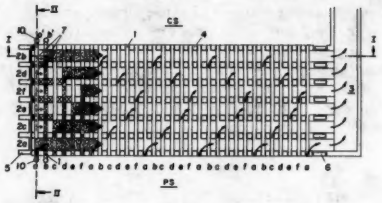
a common transversely extending waste heat collecting duct

adjacent one longitudinal end of the battery and connected to each of said longitudinal channels;

a waste heat connection at each of said pusher and coke sides of said battery, each waste heat connection being connected to each of said plurality of regenerators;

a plurality of long cross channels extending between and connected to said waste heat connections at said pusher and coke side of the battery, said cross channels being below said longitudinal channels; and

starting from an opposite longitudinal end of the battery opposite from said waste heat collecting duct, each regenerator including a series of long cross channels, each series consisting of a first long cross channel communicating with a longitudinal channel immediately next to said pusher side through an opening, a second cross channel



communicating with a longitudinal channel closest to said coke side through an opening, a third cross channel communicating with a longitudinal channel spaced one longitudinal channel away from said pusher side through an opening, a fourth cross channel communicating with a longitudinal channel one channel away from said coke side through an opening, and at least one more cross channel spaced from said fourth cross channel in the direction of said waste heat collecting duct, communicating with one more longitudinal channel through an opening, the communications between said series of long cross channels and said longitudinal channels progressing for each of said regenerators in a direction toward said waste heat collecting duct progressing inwardly away from said pusher side and said coke side respectively.

4,585,522

AUTOMATICALLY FED DISTILLATION STILL

Boyd R. Beck, Spring City, Utah; LaMar H. Stewart, Gunnison, Utah 84634; Steven L. Tapp, Ephraim, Utah; Don L. Anderson, Jr., Gunnison, Utah, and Daniel E. Nuffer, Ephraim, Utah, assignors to Lamar H. Stewart, Gunnison, Utah

Continuation-in-part of Ser. No. 134,878, Mar. 28, 1980, Pat. No. 4,314,890. This application Nov. 9, 1981, Ser. No. 319,453

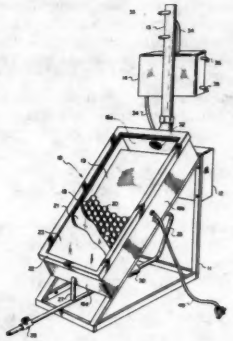
Int. Cl.⁴ B01D *3/02*

U.S. Cl. 202—181 **6 Claims**

1. An automatically fed distillation apparatus comprising:

(a) an inclined still consisting of sidewalls, a lower endwall, an upper endwall, a bottom floor, and a top all being joined together to form a sealed still compartment, said compartment being divided into an upper vaporization chamber and a lower preheating chamber by a vaporization floor sealed to said sidewalls and lower endwall parallel to said bottom floor and top, said vaporization floor terminating at its upper end short of said upper endwall, thereby forming a baffle over which liquid from said preheating chamber may overflow into said vaporization chamber, means located on the top surface of said vaporization floor to impede the downward flow of liquid on said surface, means located in said preheating chamber for heating said vaporization floor and liquid contained in the preheating chamber to a specified temperature, inlet means for introducing liquid mixture feed into the lower end of said preheating chamber, outlet means for removing residual liquid from the lower end of said vaporization chamber, and outlet means in said upper endwall for removing vapors formed within the still compartment; and

(b) feed control means interconnected with the inlet means to said preheating chamber for controlling the amount of liquid that flows thereinto, said feed control means consisting of a feed chamber having an inlet and an outlet and a hydraulically operated float control valve, which valve controls the flow of feed liquid through the feed chamber to the preheating chamber, said float control valve being selectively positioned in said feed chamber such that, when liquid in the preheating chamber is below a specified temperature, the valve will remain closed, and when



liquid in the preheating chamber is raised to at least said specified temperature, the liquid in the preheating chamber expands in volume, thereby becoming less dense, and is pushed over the baffle end of the vaporization floor by the baffle end of the vaporization floor by the more dense, cooler liquid feed in the feed chamber that flows by gravity through the outlet of the feed chamber to the preheating chamber, the exiting of liquid feed from the feed chamber causing the float control valve to open, thereby allowing feed liquid to flow through the inlet to the feed chamber as long as the temperature of the feed liquid in the preheating chamber is above the specified temperature and the feed liquid is overflowing the baffle end of the vaporization floor.

4,585,523

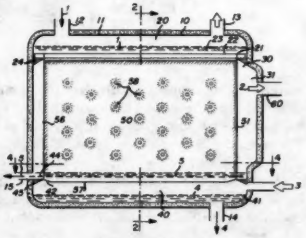
VAPOR COMPRESSION DISTILLATION APPARATUS

Edward H. Giddings, Wichita Falls, Tex.

Filed Feb. 27, 1984, Ser. No. 583,593

Int. Cl.⁴ B01D *1/22*

U.S. Cl. 202—236 **7 Claims**



1. A distillation apparatus comprising:

an outer heat insulated housing capable of being pressurized having an upper feed chamber and a lower chamber;

a plurality of parallel horizontally disposed bars supported within said housing and providing a liquid retaining floor of said feed chamber and defining the upper extremity of said lower chamber;

a plurality of horizontally disposed slats supported within said housing below, parallel to and evenly spaced with respect to said bars;

a heat exchange medium supported by and vertically disposed between said bars and said slats, dividing said lower chamber into an evaporating chamber and a condensing chamber;

said heat exchange medium being a plurality of heat transmitting membranes of thin plastic sheet material, impervious to fluid transfer therethrough, one surface of said membranes being readily wettable by a feed liquid and located contiguous to said slats, the opposing surface of said membranes being nonwettable by a condensing vapor or its condensate;

means for introducing a feed liquid into said feed chamber;

means for distributing said feed liquid onto said readily wettable evaporation surface of said membranes as a thin film;

means for introducing saturated vapor, at a temperature exceeding that of said feed liquid into said condensing chamber;

means for removing vapor from said evaporating chamber;

means for extracting excess feed liquid from said evaporating chamber;

means for extracting condensate from said condensing chamber; and

means for maintaining the interior of said housing at a pressure less than atmospheric.

4,585,524

METHOD AND APPARATUS FOR DISTILLATION OF CRUDE WATER

Jakob Hoiss, Waldhornstrasse 31, Munich 50, Fed. Rep. of Germany (D-8000)

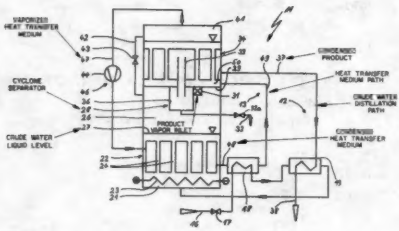
Continuation of Ser. No. 6,224, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 756,841, Jan. 5, 1977, abandoned.

This application Jun. 22, 1983, Ser. No. 506,230

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1976, 2600398

Int. Cl.[4] B01D *3/06*

U.S. Cl. 203—11 **16 Claims**



1. A method of generating substantially pyrogen-free water from demineralized crude water, comprising the steps of circulating an evaporable heating medium in a closed path between a first and a second heat-exchange zone, including increasing by an increment the heat content of the medium by compressing the latter; introducing crude water into an additional path separate from said closed path and in heat-exchange relationship therewith in said first and second heat-exchange zones at a pressure in excess of atmospheric pressure; releasing vapor from the crude water into an evaporation zone under substantially isobaric conditions satisfying the saturation curve, including transmitting the heat-content increment of the medium to the crude water in said first heat-exchange zone; purifying the vapor in a purifying zone, the purifying step including introducing the vapor into the interior of said purifying zone, and accelerating the vapor during introduction by imparting a rotary motion thereto so that contaminant particles entrained by the vapor are centrifugally removed from the latter, said purifying zone being disposed in said evaporation zone so that the vapor contacts the exterior of said purifying zone prior to the purifying step thereby creating a substantially adiabatic condition due to contact of the vapor with both the interior and exterior of said purifying zone; condensing the vapor to a condensate in said second heat-exchange zone, including withdrawing the heat-content increment from the vapor into the medium; conveying the vapor in said additional path from said first to said second heat-exchange zone due to pressure differential attributable exclusively to the effects of the heat-content increment and without the use of any mechanical device; maintaining superatmospheric pressure throughout said additional path; freely discharging the condensate from said second heat-exchange zone in said additional path, the entire additional path being defined exclusively by stationary components; and recovering the condensate from said additional path as substantially pyrogen-free water.

4,585,525

PURIFYING TRIMETHYLPHENOL BY AZEOTROPIC DISTILLATION

Richard C. Grimm, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 29, 1983, Ser. No. 536,971

Int. Cl.[4] B01D *3/38*

U.S. Cl. 203—62 **4 Claims**

1. A method of removing isophorone and chlorotrimethylphenol from a mixture of trimethylphenol, isophorone and chlorotrimethylphenol comprised of distilling said mixture in the presence of an azeotropic agent selected from ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, 1,2-butylene glycol, 1,3-butylene glycol, 1,4-butylene glycol, dimethyl sulfoxide, diethyl sulfoxide and mixtures thereof.

4,585,526

SEPARATION OF M-XYLENE FROM O-XYLENE BY EXTRACTIVE DISTILLATION

Lloyd Berg, and An-I Yeh, both of 1314 S. Third Ave., Bozeman, Mont. 59715

Filed Oct. 1, 1984, Ser. No. 656,370

Int. Cl.[4] B01D *3/40*

U.S. Cl. 203—64 **2 Claims**

1. A method for recovering m-xylene from a mixture of m-xylene and o-xylene which comprises distilling a mixture of m-xylene and o-xylene in a rectification column in the presence of an extractive agent, recovering essentially pure m-xylene as overhead product and obtaining the extractive agent and o-xylene from the stillpot or reboiler, the extractive agent comprises propoxypropanol.

4,585,527

ELECTROLYTIC CELL

Herbert S. Northway, Frodsham, and Norman Tattam, Chester, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 25, 1985, Ser. No. 695,193

Claims priority, application United Kingdom, Feb. 3, 1984, 8402923; Jun. 4, 1984, 8414200

Int. Cl.[4] C25B *1/00, 1/34, 9/00*

U.S. Cl. 204—1 R **10 Claims**

1. An electrolytic cell comprising an anode or a plurality of anodes and a cathode or a plurality of cathodes, and one or more gaskets of an electrically insulating composition, characterised in that the gasket is made at least in part of an electrically insulating composition which comprises a homogeneous

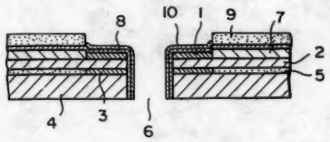
mixture of one or more elastomeric polymers and at least 15% of polytetrafluoroethylene by weight of the composition.

4,585,528

METHOD OF PROVIDING THROUGH HOLE PLATING BETWEEN CIRCUIT ELEMENTS

Hirofumi Matsumoto, Ibaraki, Japan, assignor to Nippon Mektron Ltd., Japan

Filed Mar. 29, 1984, Ser. No. 594,988
Claims priority, application Japan, Mar. 30, 1983, 58-55517
Int. Cl.[4] H05K *3/42, 3/46*
U.S. Cl. 204—15 **4 Claims**



1. A method of providing a through-hole connection between a flexible circuit element and a rigid circuit element, the flexible circuit element including a flexible substrate having a conductive pattern thereon and being adhesively or otherwise connected to and disposed above the rigid circuit element, the rigid circuit element including a rigid substrate having a conductive pattern thereon, including the steps of:

providing a through-hole passage through said flexible and rigid circuit elements, the perimeter of said through-hole passage defining land regions of said respective conductive patterns;

providing removable masking material to all of said flexible circuit element other than at least said land region of said conductive pattern;

providing a nonelectrolytic plating layer to at least said through-hole passage, said land region of said flexible circuit element and said masking material;

providing a resist layer to all of said nonelectrolytic plated layer other than at least said land region of said conductive pattern;

providing an electrolytic plating layer to at least said through-hole passage, said land region of said flexible circuit element and said nonelectrolytic plated layer;

removing said resist layer; and

removing said masking material.

4,585,529

METHOD FOR PRODUCING A METAL LITHOGRAPHIC PLATE

Katsumi Kanda, Kudamatsu; Katsunobu Kunimoto, Yamaguchi; Keiji Yamane, and Yoshikazu Kondo, both of Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd, Tokyo, Japan

Division of Ser. No. 326,747, Dec. 2, 1981, Pat. No. 4,445,998. This application Nov. 1, 1983, Ser. No. 547,563
Int. Cl.[4] C25D *5/36, 5/10*
U.S. Cl. 204—27 **1 Claim**

1. A method for producing a substrate for a steel lithographic plate which consists essentially of:

(a) subjecting a steel substrate having a thickness in the range of 50 to 400 μm, to a graining treatment by (i) electroplating with iron or (ii) etching in a solution containing ferric ions, in order to impart to said substrate an average surface roughness in the range of 0.1 to 3 μm, and

(b) imparting improved corrosion resistance to the substrate of step (a) by electroplating with chromium, nickel, tin or zinc, an alloy of said metals or multi-layer of chromium, nickel, tin or zinc to a maximum thickness of 4 μm, and then

(c) applying a hydrophilic coating of a silicate, organic titanium compound, organic phosphoric acid, ferrocyanide, ferricyanide, organic polymer coating consisting of polyacrylic acid or carboxymethyl cellulose, gallic acid, phosphotungstate or gum arabic to the treated substrate step (b).

4,585,530

PROCESS FOR FORMING ADHERENT CHROMIUM ELECTRODEPOSITS FROM HIGH ENERGY EFFICIENT BATH ON FERROUS METAL SUBSTRATES

Warren H. McMullen, East Brunswick; Hyman Chessin, Brick, and Allen R. Jones, Belford, all of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Filed Aug. 9, 1985, Ser. No. 764,273
Int. Cl.[4] C25D *5/36*
U.S. Cl. 204—34 **13 Claims**

1. A method of forming an adherent chromium deposit on a metal substrate comprising the step of:

(a) activating said substrate by electrolytically etching in an activation solution consisting essentially of a substantially neutral solution of an alkali metal sulfate, and

(b) electrodepositing chromium on said thus-activated substrate.

8. A method according to claim 1 in which said substrate is a ferrous metal substrate.

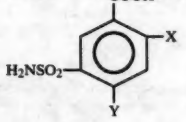
4,585,531

COMPOSITION INCLUDING AN ADDITIVE TO SULPHAMATE ELECTROLYTES FOR DEPOSITING HARD NICKEL LAYERS AND METHOD OF USING SAME

Nikolay A. Atanasov; Lyudmil G. Lyutov; Vera V. Mircheva, and Stefan R. Stefanov, all of Sofia, Bulgaria, assignors to Institute po Phisikochimia, Sofia, Bulgaria

Filed Jul. 3, 1985, Ser. No. 752,443
Int. Cl.[4] C25D *3/12, 3/18*
U.S. Cl. 204—49 **7 Claims**

1. Sulphamate electrolyte for electrodepositing hard nickel layers, said electrolyte being based on nickel sulphamate, boric acid, nickel chloride, and a surface-active additive which represents a derivative of sulphamoylbenzoic acid with the general formula



in which X an Y are chosen from a group consisting of hydrogen, halogen,

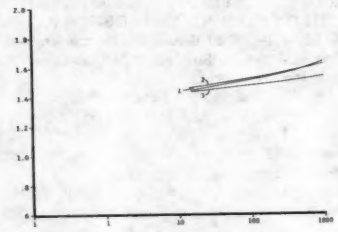
alkyl radical and a mixture of these compounds in a concentration from 0.1 to 4 g/l.

4,585,532

METHOD FOR USING ANODES HAVING $NiCo_2O_4$ CATALYST FOR THE ELECTROLYSIS OF POTASSIUM HYDROXIDE SOLUTIONS AND METHOD OF MAKING AN ANODE CONTAINING $NiCo_2O_4$ CATALYST

Ronald E. Martin, Tolland, Conn., and Paul A. Plasse, Blandford, Mass., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Filed Apr. 26, 1985, Ser. No. 727,471
Int. Cl.[4] C25B 1/02
U.S. Cl. 204—129 1 Claim



1. A method of electrolyzing water to produce oxygen and hydrogen in an electrochemical system in cells that contain aqueous potassium hydroxide electrolyte, an anode and a cathode comprising:

(a) maintaining aqueous electrolyte in contact with the cathode and the anode;

(b) maintaining a supply of water at the cathode;

(c) maintaining a supply of hydroxyl ions at the anode; and

(d) passing a direct electric current through said system causing reduction of the water to hydrogen at the cathode and oxidation of the hydroxyl ion to oxygen at the anode; wherein the improvement comprises utilizing as the anode a $NiCo_2O_4$ catalyzed electrically conductive substrate made by soaking the substrate in a solution of nickel nitrate hexahydrate and cobalt II nitrate hexahydrate and then sintering the impregnated substrate said electrolysis requiring an anode voltage of less than about 1470 millivolts at 100 milliamperes per square centimeter of anode area.

4,585,533

REMOVAL OF HALOGEN FROM POLYHALOGENATED COMPOUNDS BY ELECTROLYSIS

Jacob J. Habeeb, Sarnia, Canada, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 19, 1985, Ser. No. 725,103
Int. Cl.[4] C02F 1/46
U.S. Cl. 204—149 19 Claims

1. A method for electrochemically removing halogen from a halogenated compound in an electrolytic cell, said method comprising:

A. adding the halogenated compound to an electrolytic cell comprising:

i. a sacrificial anode selected from the group consisting of transition metals, lithium, potassium, sodium, indium, titanium, gallium and mixtures thereof;

ii. a cathode; and,

iii. an electrically conducting liquid medium;

B. applying an electrical current to the electrolytic cell whereby halogen in the halogenated compound is extracted and reacted with a metal present in the sacrificial anode to form a metal halide.

4,585,534

OPTICAL GLASS FIBER COATED WITH CATIONICALLY CURABLE POLYEPOXIDE MIXTURES

George Pasternack; Timothy E. Bishop, both of Lincolnshire, and Orvid R. Cutler, Jr., Rolling Meadows, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 29, 1983, Ser. No. 489,783
Int. Cl.[4] C08F 8/00; C08L 63/00
U.S. Cl. 522—31 8 Claims

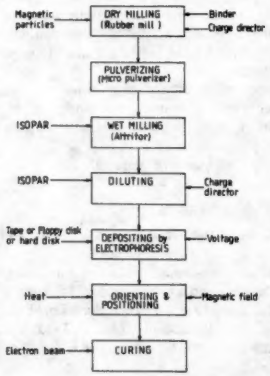
1. An ultraviolet-initiated, cationically curable liquid coating composition comprising a cationically curable polyepoxide, a polysiloxane carrying a plurality of hydroxyalkyl groups, and a photoinitiator and/or photosensitizer for an ultraviolet-activated cationic cure said polysiloxane having a molecular weight of from 300 to 30,000 and containing from 2–6 hydroxyalkyl groups per molecule, said alkyl groups containing from 2–10 carbon atoms, and primary hydroxy groups.

4,585,535

ELECTROPHORETIC METHOD OF PRODUCING HIGH-DENSITY MAGNETIC RECORDING MEDIA

Arden Sher, Belmont, and Karen Sabo, Fremont, both of Calif., assignors to Savin Corporation, Stamford, Conn.

Filed Mar. 11, 1985, Ser. No. 710,586
Int. Cl.[4] C25D 13/02, 15/00
U.S. Cl. 204—180.6 11 Claims



1. A method of making a composition adapted to deposit a magnetic coating by electrophoresis on a carrier medium including the steps of dry-milling a major amount of magnetic particles with a minor amount of a binder and a minor amount of charge director to produce a solid chip of encapsulated magnetic particles, comminuting said chip into small pieces, wet-milling a minor amount of said chip pieces with a major amount of a low-boiling aliphatic hydrocarbon liquid to produce a suspension, depositing encapsulated magnetic particles from said suspension on a carrier medium by electrophoresis, orienting said magnetic particles, and then curing the binder to produce a magnetic recording medium.

4,585,536

ION EXCHANGE MEMBRANES CONSISTING OF PYRROLE POLYMERS

Hermann Puetter, Neustadt; Herbert Naarmann, Wattenheim, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 23, 1984, Ser. No. 603,241

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314817

Int. Cl.[4] B01D *57/02*

U.S. Cl. 204—182.3 **6 Claims**

1. Apparatus for carrying out an electrochemical process for selectively separating ions in aqueous solution, in which two or more different spaces are separated by means of an ion exchange membrane, wherein the ion exchange membrane material consists of a pyrrole polymer which has been prepared by anodic oxidation of the monomers.

4,585,537

PROCESS FOR PRODUCING CONTINUOUS INSULATED METALLIC SUBSTRATE

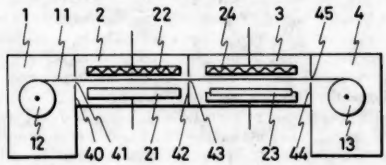
Takehisa Nakayama, Kobe; Kunio Nishimura, Kyoto; Kazunori Tsuge, and Yoshihisa Tawada, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1984, Ser. No. 677,773

Claims priority, application Japan, Jan. 12, 1983, 58-227244

Int. Cl.[4] C25B *11/04*

U.S. Cl. 204—192 D **15 Claims**



1. A process for producing a continuous web of an insulated metallic substrate, which comprises depositing an insulation layer of a non-monocrystalline material containing Si on a surface of a continuous web of a metallic substrate by a plasma CVD method using parallel plate electrodes, and without exposing the metallic substrate having the insulation layer thereon to atmospheric conditions successively depositing a back electrode directly on the insulation layer by a sputtering method or a vapor deposition method.

4,585,538

METHOD AND APPARATUS OF CLEANING RESIDUAL ANODES EMPLOYED FOR FUSED-SALT ELECTROLYSIS

Helmut Bachmann, Dinslaken-Hiesfeld, Fed. Rep. of Germany, assignor to Kaiser Aluminium Europe Inc., Dusseldorf, Fed. Rep. of Germany

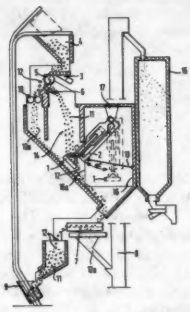
Filed Aug. 8, 1984, Ser. No. 638,891

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1983, 3329736

Int. Cl.[4] C25C *3/14, 3/10;* **B02C** *17/00*

U.S. Cl. 204—225 **10 Claims**

1. A method of cleaning residual anodes employed for fused-salt electrolysis, in which the residual anode is removed from the electrolytic cell and is guided into a cleaning station, and in which bath material from the electrolytic cell that has remained on the residual anode is mechanically removed therefrom and is optionally returned to the fused-salt electrolysis, characterized in that the residual anode (1) rotates within the cleaning station and is exposed as a rebound plate to a flow of



striker bodies (11) which knock the bath material (12) off the residual anode (1).

4,585,539

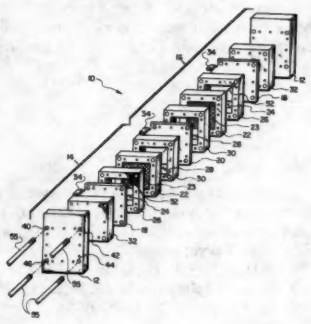
ELECTROLYTIC REACTOR

Gwynne I. Edson, Westminster, Calif., assignor to Technic, Inc., Cranston, R.I.

Continuation-in-part of Ser. No. 408,851, Aug. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 297,063, Aug. 27, 1981. This application Oct. 12, 1983, Ser. No. 541,099

Int. Cl.[4] C25B *15/08, 11/03;* **C25D** *21/22;* **C25C** *7/04*

U.S. Cl. 204—228 **61 Claims**



1. An electrolytic reactor for the treatment of chemical species dissolved in electrically conductive solutions, comprising:

(a) a sealed container;

(b) a microporous, electrically insulating septum subdividing said container into first and second solution chambers;

(c) first electrode means in said first solution chamber;

(d) second electrode means in said second solution chamber;

(e) static surface extension means, composed of discrete, particulate bodies, packing at least one of said solution chambers, in electrically conductive contact with the electrode in said chamber;

(f) first conduit means, including at least one inlet port and one discharge port, for the introduction of a first electrolyte into said first chamber and the withdrawal of electrolyte therefrom;

(g) second conduit means, including at least one inlet port and one discharge port, for the introduction of a second electrolyte into, and the withdrawal thereof from, said second chamber;

(h) current supply means for the imposition of a direct electrical potential across said first and second electrode means, and

(i) current reversing means, for reversing the potential applied across said first and second electrode means.

4,585,540

COMPOSITE CATALYTIC MATERIAL PARTICULARLY FOR ELECTROLYSIS ELECTRODES AND METHOD OF MANUFACTURE

Henri B. Beer, Heide-Kalmthout; Frans A. M. Van den Keybus, Essen, both of Belgium; Jeries I. Bishara, Mentor; William A. Kovatch, Painesville, both of Ohio, and Jean M. Hinden, Chambésy, Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Jan. 7, 1985, Ser. No. 689,134

Claims priority, application European Pat. Off., Sep. 13, 1984, 84810446.9

Int. Cl.[4] C25B *11/00*; H01M *4/88*

U.S. Cl. 204—290 F **20 Claims**

1. A porous high surface area composite electroconductive catalytic material, comprising a porous high surface area preformed host matrix and a subsequently-applied impregnated catalyst supported by and distributed in the preformed host matrix, the composite catalytic material having an outer face which in use is in contact with a fluid medium, wherein the porous host matrix is a catalytic material comprising at least one platinum-group metal oxide and at least one non-precious metal oxide mixed intimately in a porous high surface area matrix structure and said subsequently-applied impregnated catalyst consists of at least one platinum-group metal, or at least one platinum-group metal oxide, or mixture thereof.

4,585,541

PLASMA ANODIZATION SYSTEM

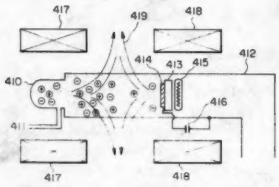
Kiyoshi Miyake, Tsukui; Shinichiro Kimura, Hachioji, and Terunori Warabisako, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 8, 1984, Ser. No. 669,347

Claims priority, application Japan, Nov. 11, 1983, 58-210835

Int. Cl.[4] C23C *14/00*

U.S. Cl. 204—298 **14 Claims**



1. A plasma anodization system comprising: a vacuum chamber; a gas plasma source for generating a plasma containing at least oxygen; and a table for holding a substance to be oxidized, wherein the improvement comprises means for generating at least one cusp field between said gas plasma source and the substance held on said table so as to prevent ions or electrons in the gas plasma from bombarding the surface of the substance held on the table.

4,585,542

THERMAL PROTECTION METHOD FOR ELECTROANALYTICAL CELL AND AMPEROMETRIC PROBE

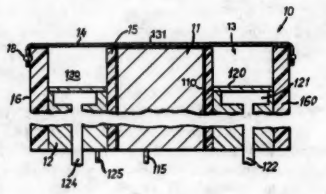
Harry D. Wright, Collonge-Bellerive; John M. Hale, Meinier, and Eugen Weber, Hinwil, all of Switzerland, assignors to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive, Collonge-Bellerive, Switzerland

Continuation of Ser. No. 345,536, Feb. 3, 1982, Pat. No. 4,518,477. This application Jan. 14, 1985, Ser. No. 691,519

The portion of the term of this patent subsequent to May 21, 2002, has been disclaimed.

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—415 **4 Claims**



1. In a membrane-enclosed amperometric probe comprising an elongated and generally cylindrical body having a sensor face at one end of said body; an electrolyte space covered by said membrane and in contact with at least two electrodes; an electrical connecting means extending from said electrodes through said body to a region near the other end of said body; the improvement which comprises said body comprising at least two elongated fluid-passing conduits not being in fluid communication with said electrolyte space and extending in axial direction through said body from a first region near said one end of said body to a second region near said other end of said body; said conduits having mutually communicating ends in said first region and separate fluid-feeding ends in said second region.

4,585,543

METHOD FOR RECOVERING HYDROCARBONS FROM SOLIDS

Dennis A. Duncan, Sharon, and Herman Woebeke, Barnstable, both of Mass., assignors to Stone & Webster Engineering Corp., Boston, Mass.

Filed Mar. 9, 1984, Ser. No. 587,905

Int. Cl.[4] C10B *49/10, 53/06*; C10G *1/00*

U.S. Cl. 208—11 R **10 Claims**

1. A process for separating hydrocarbons from a finely divided solid that contains hydrocarbons said process comprising:

(a) preheating a finely divided entrained hydrocarbon-containing solid;

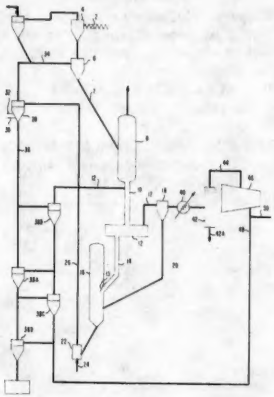
(b) passing the preheated finely divided hydrocarbon-containing solids to a reaction zone where they are contacted with a gaseous stream at a sufficiently high temperature at a residence time of about 0.01 to 1.5 seconds to gasify from 30 to 60% by weight of the hydrocarbon and form a gaseous oil stream that comprises gas, oil and finely divided entrained hydrocarbon-containing solid;

(c) passing said gaseous oil stream to a separator where the spent finely divided hydrocarbon-containing solid is separated from the gaseous oil stream;

(d) passing the solid material obtained in the separator to a stripper wherein residual gaseous hydrocarbon vapors are removed and stripped hydrocarbon-containing solid is obtained; and

(e) dividing the stream of stripped hydrocarbon-containing solid into two streams, a first stream being sent to a cy-

clone cascade for direct heat exchange with a recycle gas to furnish a hot gaseous stream to the reactor and to the



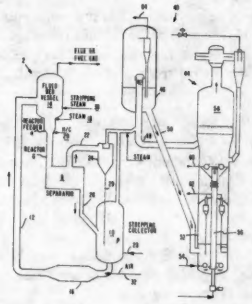
stripper and a second portion passed to a gasifier and then recycled to the reactor.

4,585,544

HYDROCARBON PRETREATMENT PROCESS FOR CATALYTIC CRACKING

Robert J. Gartside, Wellesley, Mass.; Axel R. Johnson, North Babylon, N.Y.; Joseph L. Ross, Houston, Tex.; Dennis A. Duncan, Sharon, Mass., and Edwin J. Bassler, Summit, N.J., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Mar. 9, 1984, Ser. No. 587,937
Int. Cl.[3] C10G *51/04*
U.S. Cl. 208—73 **17 Claims**



14. A process for pretreating heavy hydrocarbon feedstock for use as a feed in the production of liquid hydrocarbon fuels comprising the steps of:

(a) delivering the heavy hydrocarbon feedstock to a tubular thermal pretreating reactor;

(b) delivering hot particulate solids to the tubular thermal pretreating reactor;

(c) pretreating the heavy hydrocarbon feedstock at a temperature between 1050° F. and 1200° F.; and a residence time of 0.20 to 0.50 seconds wherein the heavy hydrocarbon feedstock is vaporized thereby forming a pretreated gas.

(d) separating the pretreated gas from the particulate solids;

(e) immediately delivering the separated pretreated gas from the thermal pretreating reactor to a catalytic reactor; and

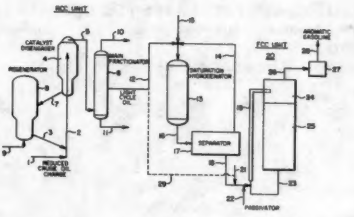
(f) catalytically cracking the pretreated effluent from the thermal cracking reactor.

4,585,545

PROCESS FOR THE PRODUCTION OF AROMATIC FUEL

Robert E. Yancey, Jr., Ashland, and William P. Hettinger, Jr., Russell, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Dec. 7, 1984, Ser. No. 679,172
Int. Cl.[4] C10G *55/06, 57/00*
U.S. Cl. 208—74 **10 Claims**



1. A process for the production of high octane gasoline component comprising the sequential steps of:

A. Cracking carbometallic petroleum oil characterized by a Conradson Carbon content of at least 1.0 wt% and a metals content of at least 4 ppm Nickel Equivalents by weight in a riser cracking zone at cracking conditions in the presence of fluid cracking catalyst,

B. recovering by distillation a light cycle oil fraction boiling in the range of about 216° C. to about 332° C. (about 430° F. to about 630° F.) and containing from about 10 vol. % to about 60 vol. % dual ring unsaturated aromatic hydrocarbons,

C. contacting said fraction in the mixed phase in a saturation hydrogenation zone with a nickel-containing hydrogenation catalyst at selective conditions of temperature, pressure, space velocity and hydrogen circulation rate whereby at least 20–80 wt. % of the unsaturated aromatic hydrocarbons add hydrogen molecules to one of the rings to produce a partially saturated bicyclic hydrocarbon fraction,

D. subjecting said partially saturated bicyclic hydrocarbon fraction to fluid catalytic cracking in a riser cracking zone at cracking conditions in the presence of with a zeolite fluid cracking catalyst and a metals passivator and in the absence of added hydrogen whereby rate of dehydrogenation is slowed sufficiently so that one ring of the bicyclic hydrocarbon rings cracks yielding monoaromatic hydrocarbons and,

E. recovering from said monoaromatic hydrocarbons a gasoline component product characterized by an average octane of at least 91 and a monoaromatic hydrocarbon content in the range of 35 to 55 vol. %.

4,585,546
HYDROTREATING PETROLEUM HEAVY ENDS IN AROMATIC SOLVENTS WITH LARGE PORE SIZE ALUMINA

Emmerson Bowes, Hopewell; Malvina Farcasiu, and Eric J. Y. Scott, both of Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 29, 1983, Ser. No. 490,075
Int. Cl.[4] C10G *45/00, 45/04*
U.S. Cl. 208—253 9 Claims

1. A process for demetallizing and desulfurizing a residual oil which comprises:

(a) adding to said residual oil an aromatic solvent selected from the group consisting of benzene, toluene, xylene and light cycle oil reformates;

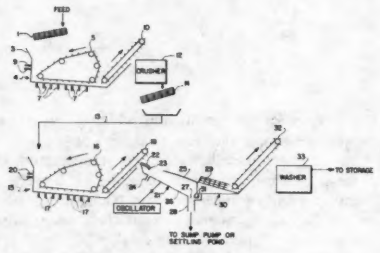
(b) passing the resulting mixture of residual oil and solvent together with hydrogen in contact with a catalyst consisting essentially of calcined alumina having an average pore size diameter greater than about 220 Angstroms; and

(c) recovering from the resulting product stream a residual oil having a substantially reduced sulfur and metal content.

4,585,547
METHOD AND APPARATUS FOR CLEANING COAL

G. W. Nicholson, 801 Frank Nelson Bldg., Birmingham, Ala. 35203

Filed Sep. 14, 1984, Ser. No. 650,738
Int. Cl.[4] B03B *5/62, 11/00;* B02C *17/02*
U.S. Cl. 209—3 19 Claims



11. A process for separating coal from impurities, which comprises:

suspending a raw mass containing coal and impurities in water,

agitating the suspension sufficiently to saturate the raw mass with water, disperse the impurities into the water and to dissociate the coal from the impurities,

crushing the dissociated mass,

suspending the crushed mass in water,

further agitating the crushed mass suspension sufficiently to further saturate the crushed suspended mass with water and to further disperse the impurities into the water and to further dissociate the coal from the impurities,

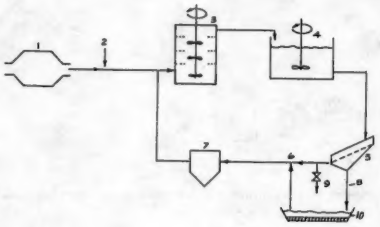
spreading the further dissociated mass substantially evenly across the surface of a body of water in a separator pan having a hole in its bottom and a separator plate therein, flowing the further dissociated mass in said separator pan to create an upper flow portion and a lower flow portion of different specific gravities, intersecting said upper and lower flows by the separator plate so that the upper flow portion flows over the separator plate and the lower flow portion flows under the separator plates,

collecting the separated coal particles.

4,585,548
RECOVERY OF METAL VALUES FROM MINERAL ORES BY INCORPORATION IN COAL-OIL AGGLOMERATES

Mark D. Cadzow, Melbourne, Australia; Graham J. Elkes, Surrey, United Kingdom; Gavin J. Ewin, and David E. Mainwaring, both of Melbourne, Australia, assignors to BP Australia Limited, Victoria, Australia

PCT No. PCT/AU84/00071, § 371 Date Dec. 10, 1984, § 102(e) Date Dec. 10, 1984, PCT Pub. No. WO84/04259, PCT Pub. Date Nov. 8, 1984
PCT Filed Apr. 26, 1984, Ser. No. 690,495
Claims priority, application Australia, Apr. 29, 1983, PF9120
Int. Cl.[4] B03B *1/04*
U.S. Cl. 209—5 19 Claims



1. A method of recovering a mineral selected from the group consisting of metal, metal oxide and metal sulfide, having a lyophilic surface, present in low concentration in a mixture of solids, comprising: grinding the mixture of solids, forming a slurry of said solids, adding thereto in a contacting zone a carbon source material and a hydrocarbon liquid, mixing said slurry of solids, carbon source and hydrocarbon liquid in an agglomeration zone to form agglomerates containing said lyophilic mineral, carbon source material and hydrocarbon liquid, separating said agglomerates from the remaining slurry of solids and subsequently recycling said separated agglomerates to said contacting zone, the size of agglomerates in said contacting zone, being below 500 microns, and repeating the process until the concentration of said lyophilic mineral in the separated agglomerates has reached a desired level and then recovering said mineral from said agglomerates.

4,585,549
FLOTATION OF UPPER ZONE COPPER SULFIDE ORES

Subhaschandra G. Malghan, Cypress, Tex., assignor to Exxon Research & Enginerring Company, Florham Park, N.J.

Filed Jan. 30, 1984, Ser. No. 574,717
Int. Cl.[4] B03D *1/02*
U.S. Cl. 209—166 14 Claims

1. A process for recovering copper minerals from ores containing oxidized copper minerals in association with copper sulfide minerals comprising;

obtaining a pulp of the ore in water;

conditioning the pulp with an alkaline agent;

thereafter conditioning the pulp with a collector or mixture of collectors for copper minerals;

adding a surface modifying agent at a rate and an amount sufficient to decrease the platinum electrode potential when measured against a saturated calomel electrode of below about −100 mV, said surface modifying agent being selected from the group consisting of sodium sulfide, lime and sodium hydroxide;

conditioning the pulp with the surface modifying agent only until the platinum electrode potential of the pulp begins to become less negative; and

thereafter subjecting the so treated ore to flotation to obtain a flotation concentrate and recovering copper minerals from said flotation concentrate.

4,585,550

HIGH MOLECULAR WEIGHT CARBOXYLIC ACIDS AS COLLECTORS OF MINERAL VALUES FROM CARBONACEOUS ORES

Peter V. Avotins, Fairfield, and Donald P. Spitzer, Riverside, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 6, 1984, Ser. No. 647,772
Int. Cl.[4] B03D 1/02
U.S. Cl. 209—166 11 Claims

1. A process for the recovery of germanium values from ore as a component of carbonaceous material present in minor amounts in said ore which comprises

(a) grinding said ore to a particle size of smaller than about −28 mesh,

(b) diluting the resultant ground ore with water to form a slurry,

(c) contacting the resultant slurry with a collector comprising an oil and a carboxylic acid or acidester having a molecular weight of at least about 500 for from about 0.1 to about 30 minutes, with agitation,

(d) adding a frother to the so conditioned slurry,

(e) recovering the carbonaceous component of said ore by froth flotation and

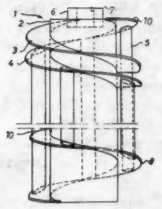
(f) recovering germanium values from said carbonaceous component.

4,585,551

ROTOR FOR SORTING APPARATUS FOR CLEANING FIBROUS SUSPENSIONS

Walter Musselmann, and Juan Valdiva, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed May 9, 1983, Ser. No. 493,023
Claims priority, application Fed. Rep. of Germany, May 12, 1982, 3217824
Int. Cl.[4] B07B 1/50
U.S. Cl. 209—379 10 Claims



1. A rotor for a sorting apparatus used to clean fibrous suspensions such as fibrous suspensions produced in paper making wherein the rotor is mounted to rotate about an axis and has sorter blades extending substantially parallel to the axis of rotation comprising:

a central supporting cylinder,

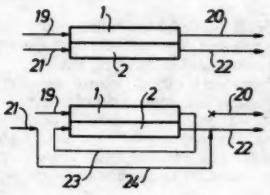
a supporting wall formed on said cylinder and shaped to provide a spiral surface which is coaxial with the rotor axis of rotation to impart movement of the fibrous suspension along the axis and sorter blades mounted to said supporting wall with a desired orientation relative to the direction of rotation of the rotor so as to create a hydrofoil-like effect.

4,585,552

SYSTEM FOR THE MEASUREMENT OF THE DIFFERENCE BETWEEN TWO FLUID FLOWS IN SEPARATE DUCTS

Bengt-Ake G. Gummesson, Bara; Bengt M. Holmberg, Bjarred; Sven A. Jonsson, Staffanstorp, and Ulf K. Mattisson, Sandby, all of Sweden, assignors to Gambro Lundia AB, Sweden

Filed Sep. 12, 1983, Ser. No. 531,277
Claims priority, application Sweden, Sep. 28, 1982, 8205529
Int. Cl.[4] B01D 13/00
U.S. Cl. 210—87 10 Claims



1. In dialysis equipment including a dialyser, a system for measuring the difference in the rate of flow between first and second fluid streams, said first fluid stream comprising clean dialysis solution flowing to the dialyser and said second fluid stream comprising spent dialysis solution flowing from the dialyser, said system comprising a first duct for receiving said first fluid stream flowing therethrough, a second duct for receiving said second fluid stream flowing therethrough, measuring means for measuring the difference in the rate of flow between said first and second fluid streams within said first and second ducts, and transferring means for preventing the flow of said second fluid stream through said second duct while flowing said first fluid stream through both said first and second ducts without passing said first fluid stream through the dialyser and without altering said rate of flow of said first fluid stream between said first and second ducts such that said rate of flow of said first fluid stream through said first and second ducts is substantially equal, whereby the measured difference of the rate of flow of said first fluid stream flowing through said first and second ducts is adaptable as a reference.

4,585,553

APPARATUS FOR THE REMOVAL OF SOLID PARTICLES FROM PRINTING INK OR OTHER LIQUIDS

Shinichi Hikosaka, Tokyo; Shinya Fujino, Kawagoe, and Takao Fukaya, Tokyo, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Nov. 21, 1983, Ser. No. 553,968
Claims priority, application Japan, Nov. 24, 1982, 57-205870; Nov. 24, 1982, 57-177552[U]; Dec. 21, 1982, 57-192231[U]; May 6, 1983, 58-67494[U]; Sep. 13, 1983, 58-141859[U]
Int. Cl.[4] B01D 25/26, 35/06
U.S. Cl. 210—107 11 Claims

1. An apparatus for the separation of solids from a liquid, comprising:

(a) an upstanding cylindrical casing having an inlet for admission of a liquid to be processed and an outlet for discharge of said liquid, said inlet and said outlet being arranged at a first end of said casing, said casing having a drain port at a second end thereof;

(b) magnet means disposed on an outer surface of and surrounding said casing, said magnet means being capable of attracting magnetic solids contained in said liquid while said liquid is flowing through said casing from said inlet to said outlet;

(c) a generally cylindrical filter assembly mounted concentrically within said casing being capable of removing

nonmagnetic solids from said liquid, said filter assembly comprising:

(i) a core rod rotatably mounted at said first end of said casing and extending downwardly into said casing;

(ii) a stack of apertured filter discs concentrically mounted on said core rod for rotation therewith, said filter discs being capable of trapping solids contained in said liquid;

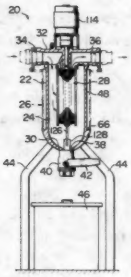
(iii) a plurality of stationary cleaner blades slidably engaged between said filter discs, said cleaner blades scraping said solids off said filter discs upon rotation of said filter discs, said cleaner blades being arranged in two stacks circumferentially spaced around said stack of filter discs;

(iv) a space being forced radially inwardly of said filter discs and said cleaner blades, said space being in communication with said outlet; and

(d) a bidirectional rotary actuator disposed at said first end of said casing, said actuator being coupled to said core rod to rotate said core rod and said filter discs relative to said cleaner blades, said actuator rotating said core rod bidirectionally through less than a 360° angle.

11. An apparatus for the separation of solids from a liquid, comprising:

(a) an upstanding cylindrical casing having an inlet for admission of a liquid to be processed and an outlet for discharge of said liquid, said inlet and said outlet being arranged at a first end of said casing, said casing having a drain port at a second end thereof;



(b) magnet means disposed on an outer surface of and surrounding said casing, said magnet means being capable of attracting magnetic solids contained in said liquid while said liquid is flowing through said casing from said inlet to said outlet;

(c) a generally cylindrical filter assembly mounted concentrically within said casing being capable of removing nonmagnetic solids from said liquid, said filter assembly comprising:

(i) a core rod having a first end rotatably mounted at said first end of said casing and extending downwardly into said casing;

(ii) a stack of apertured filter discs concentrically mounted on said core rod for rotation therewith, said filter discs being capable of trapping solids contained in said liquid;

(iii) a plurality of stationary cleaner blades slidably engaged between said filter discs, said cleaner blades scraping said solids off said filter discs upon rotation of said filter discs;

(iv) a space being formed radially inwardly of said filter discs and said cleaner blades, said space being in communication with said outlet;

(d) an actuator disposed at said first end of said casing, said actuator being coupled to said core rod to rotate said core rod and said filter discs relative to said cleaner blades; and

(e) agitator means including an agitator blade removably attached to a second end of said core rod, said agitator means rotating with rotation of said core rod, said agitator blade partially projecting into said drain port and agitating accumulated solids at said second end of said casing concurrently with cleaning of said filter discs, thereby preventing said accumulated solids from clogging said drain port.

4,585,554

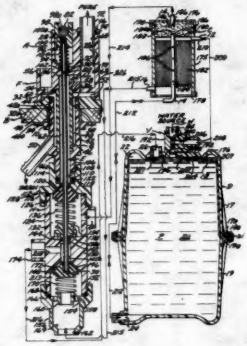
COMBINED PURIFIED WATER DISPENSING DEVICE AND REJECT WATER CONTROL DEVICE

Bruce D. Burrows, 363 Orizaba St., Long Beach, Calif. 90814

Continuation-in-part of Ser. No. 457,763, Jan. 13, 1983, abandoned, which is a continuation of Ser. No. 295,696, Aug. 24, 1981, abandoned. This application May 1, 1984, Ser. No. 573,155

Int. Cl.[4] B01D *31/00*

U.S. Cl. 210—110 **7 Claims**



1. In combination with a pressurized feed water supplied reverse osmosis cartridge that has a purified water outlet and a reject water outlet; a tank that has a movable barrier therein that subdivides an interior of said tank into first and second compartments of variable volume and that are in communication with, a purified water passage and a reject water passage defined in said tank, said purified water passage in communication with said purified water outlet; a purified water dispensing and reject water control device, said control device including:

(a) an elongated vertical valve body that has upper and lower ends and a hollow interior defined in part by means defining upper and lower confined spaces that include upper and lower valve seats and said valve body including a purified water inlet in communication with said upper confined space and said purified water passage; a reject water inlet in communication with said reject water outlet; said reject water passage in communication with said lower confined space and said second compartment; said elongate valve body having formed therein a reject water receiving cavity adjacent said upper end of said valve body; a reject water drain outlet situated below said cavity;

(b) first and second valve members which when in first positions seal with said upper and lower valve seats, said second valve member including a first water flow restrictor through which reject water may flow upwardly from said lower confined space when said second valve member is in said first position;

(c) first means that tend to maintain said first and second valve members in said first position;

(d) a tube and elongate tubular member longitudinally, and concentrically disposed in said valve body, said tube disposed in a fixed position in said valve body, said tubular member having an upper end disposed above said reject water receiving cavity and a lower end within said lower confined space, said elongate tubular member, longitudinally movable relative to said tube, said tubular member having a first elongate passage therein of sufficiently small

transverse cross section as to serve as a second reject water flow restrictor, said tubular member and tube cooperating to define a second passage therebetween that is in communication with said upper valve seat and a purified water dispensing outlet in said upper end of said valve body, and said tube and a portion of said valve body most adjacent thereto cooperating to define a third passage that is in communication with said reject water receiving cavity and said reject water drain outlet, said elongate member so operatively associated with said first and second valve members that said first and second valve members are moved to second positions when said elongate member is moved downwardly from a first to a second position relative to said tube, said second valve member when in said second position permitting reject water entering said lower confined space to by-pass said first flow restrictor and substantially by-pass said second flow restrictor to flow through said reject water passage to said second compartment to expand said second compartment and force purified water in said first compartment to flow therefrom through said purified water passage, purified water inlet, and second passage to discharge through said purified water dispensing outlet so long as said first and second valve members are in said second positions, with flow of purified water from said purified water dispensing outlet and flow of reject water to said second compartment terminating when said first and second valve members return to said first positions, with purified water from said purified water outlet thereafter flowing to said first compartment to expand said first compartment and force reject water in said second compartment therefrom to flow into said reject water passage, into said valve body to enter said second flow restrictor and drop by gravity from said upper end of said tubular member through an air gap into said reject water receiving cavity, and reject water from said reject water outlet entering said lower confined space to flow sequentially through said first and second reject water flow restrictors to said reject water receiving cavity for subsequent flow to said reject water drain outlet.

4,585,555

BARRIER OXIDATION DITCH HAVING INCREASED FLOW EFFICIENCY AND OXYGEN TRANSFER EFFICIENCY

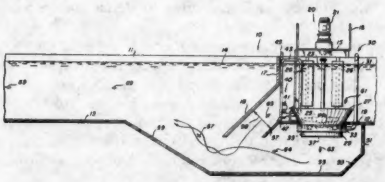
John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Continuation-in-part of Ser. No. 361,205, Mar. 29, 1982, Pat. No. 4,455,232, which is a continuation-in-part of Ser. No. 75,412, Sep. 14, 1979, Pat. No. 4,394,268, which is a continuation-in-part of Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, which is a continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Oct. 12, 1982, Ser. No. 433,638

The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

Int. Cl.[4] C02F *3/20*

U.S. Cl. 210—194 **29 Claims**



1. In a barrier oxidation ditch comprising an endless channel and a barrier which is sealably disposed thereacross for dividing said endless channel into at least one intake channel portion upstream of said barrier and a discharge channel portion downstream of said barrier, at least one circulator/aerator comprising:

(a) a pump/aerator including:

(1) a draft tube in fluid communication with said intake channel portion;

(2) an impeller operably mounted within said draft tube; and

(3) air sparge means disposed beneath said impeller;

(b) an induced flow duct having an inlet at one end which is in fluid communication with said intake channel portion, said induced flow duct being downwardly inclined in a downstream direction at a predetermined acute angle in the range of approximately 30° to 60° below horizontal and having an outlet at the other end; and

(c) a discharge duct disposed to pass beneath said barrier at a selected maximum depth, said discharge duct comprising:

(1) a pumped flow portion in fluid communication with said intake channel portion through said draft tube, said pumped flow portion having an outlet end; and

(2) a combined flow portion having an inlet at one end which is in fluid communication with the outlet end of said pumped flow portion and the outlet end of said induced flow duct, and having a terminal segment at the other end which is in fluid communication with said discharge channel portion.

4,585,556

ARRANGEMENT FOR REMOVAL OF SLUDGE SEPARATED BY FLOTATION IN THE BIOLOGICAL ACTIVATING CLEANING OF WASTE WATERS USING A FLUID FILTRATION

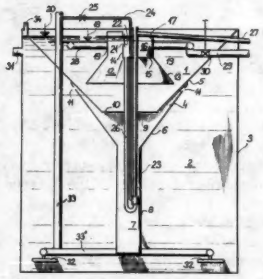
Vladimir Mackrle, Praha, and Svatopluk Mackrle, Brno, both of Czechoslovakia, assignors to Agrozet, koncernova obchodna organizacia, Zvolen, Czechoslovakia

Continuation of Ser. No. 504,277, Jun. 14, 1983, abandoned. This application Apr. 22, 1985, Ser. No. 725,154

Claims priority, application Czechoslovakia, Jun. 14, 1982, 4401-82

Int. Cl.[4] C02F *11/02, 3/12*

U.S. Cl. 210—221.2 **3 Claims**



1. An arrangement for the separation of sludge separated by flotation in the biological activating cleaning of waste water using fluid filtration, said arrangement comprising

an activating space above which a separating space is provided, said separating space being provided with a sludge trap, for catching sludge separated by flotation, above its inlet passage and with a collecting ring for sub-surface take-off of cleaned water in its upper part, said sludge trap being located at the level of the operating surface of the separating space above the collecting ring for cleaned water;

said sludge trap comprising an upper cylindrical part and a lower frusto-conical part;

a collecting vessel with an overflow and a sucking-off device

for the sludge, the collecting vessel being disposed in the upper part of the sludge trap, the sludge trap being connected with said collecting vessel, the overflow of the collecting vessel being formed by its upper edge disposed at the level of an increased surface of liquid and connected to a sucking-off device;

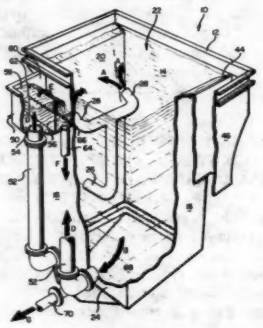
wherein the collecting vessel is formed by part of the upper cylindrical part of the sludge trap, by a bottom, and a partition wall provided with a by-pass opening forming the connection of the sludge trap with the collecting vessel, the overflow of the sludge trap being formed by the upper edge of the upper cylindrical part.

4,585,557

APPARATUS FOR CONCENTRATING, SEPARATING AND REMOVING FLOATING SOLID MATERIAL

Sanfred E. Turnquist, Rte. 1, Box 4, Caddo Gap, Ark. 71935

Filed Jan. 4, 1984, Ser. No. 568,148
Int. Cl.[4] B01D *35/00*
U.S. Cl. 210—320 **26 Claims**



1. An improved apparatus for substantially concentrating, selectively separating, and removing floating solids material from the surface of an untreated volume of associated liquid, said apparatus comprising:

walls defining a treatment volume, said treatment volume disposed adjacent the untreated volume of liquid;

entry means disposed between the untreated volume and said treatment volume;

combined baffle and channeling means disposed across said treatment volume, and extending above the surface thereof and below the surface thereof to a depth sufficient to prevent flow thereunder of the floating solids material, but to permit flow thereunder of the associated liquid; said combined baffle and channeling means further for directing the flow of the floating solids material from said treatment volume directly into a take-off chamber means;

said take-off chamber means receiving the floating solids material and for channeling the solids material therefrom, said take-off chamber means disposed adjacent said treatment volume; and

a take-off weir disposed at the front portion of said take-off chamber means and between said take-off chamber means and said treatment volume;

whereby the floating solids material flows from the untreated volume, past the entry means, into the treatment volume, and is channeled therefrom over the take-off weir into the take-off chamber means for discharge.

13. An improved floating solids concentration, separation and removal apparatus comprising means for initially at least partially concentrating, separating and removing a solids material from a liquid material, and further comprising means for further concentration of the solids material in the form of a sludge accumulation and disposal stage, said further concentration means comprising:

a sludge tank having walls for containing a volume of substantial depth of influent water containing solids material to be separated therefrom, said volume having therein a surface level zone near the top of said volume and having a deep level effluent zone near the bottom of said sludge tank of substantial depth;

influent means for receiving a flow of the solids containing water and directing the flow within and horizontally across the surface level zone to distribute the floating solids material to accumulate a concentrated solids sludge on the surface of the volume for removal and to render the deep level effluent zone relatively free of the solids contamination, and to recirculate solids which do not immediately float in a loop-shaped current for continuous return to the surface until said solids float;

means for removing the accumulated sludge from the surface of the volume;

surface level control means including at least one surface level control weir disposed adjacent said tank for receiving effluent therefrom; and

effluent conveying means for conveying the effluent from the deep level effluent zone of relative freedom from solids material;

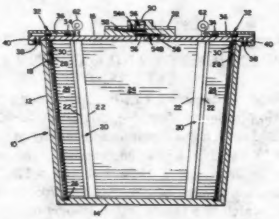
whereby floating solids material and associated liquid is received in substantially concentrated form, further concentrated in the form of a sludge on the surface of the volume of water, and removed from the sludge tank for disposal.

4,585,558

SEPARATION SYSTEM

Leslie S. Rubin, Newton, Mass., assignor to Foster-Miller, Inc., Waltham, Mass.

Filed Sep. 19, 1984, Ser. No. 652,322
Int. Cl.[4] B04B *7/16*
U.S. Cl. 210—360.1 **18 Claims**



1. A disposal container for use in disposal of radioactive waste materials comprising

top wall structure,

bottom wall structure, and

circumferential side wall structure interconnecting said top and bottom wall structures to define an enclosed container,

separation structure in said container adjacent the inner surface of said side wall structure for allowing passage of liquid and retention of solids,

inlet port structure in said top wall structure,

discharge port structure at the periphery of said container in communication with the outer surface of said separation structure for receiving liquid that passes through said separation structure,

first centrifugally actuated valve structure having a normal position closing said inlet port structure and a centrifugally actuated position opening said inlet port structure,

second centrifugally actuated valve structure having a normal position closing said discharge port structure and a

centrifugally actuated position opening said discharge port structure, and

coupling structure integral with wall structure of said container for releasable engagement with centrifugal drive structure.

4,585,559
INSOLUBLE CHELATING COMPOSITIONS

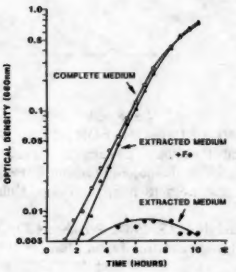
Irving W. DeVoe, Baie d'Urfe, and Bruce E. Holbein, Pointe-Claire, both of Canada, assignors to DeVoe-Holbein International, N.V., Curacao, Netherlands Antilles

Division of Ser. No. 469,431, Feb. 24, 1983, Pat. No. 4,530,963, which is a continuation-in-part of Ser. No. 417,376, Sep. 13, 1982, abandoned. This application Jun. 28, 1984, Ser. No. 625,539

Claims priority, application Canada, Aug. 20, 1982, 409869; Jan. 31, 1983, 420567

Int. Cl.[4] B01D *15/00*

U.S. Cl. 210—679 **38 Claims**



1. A method for inhibiting microbial growth in a liquid nutrient medium containing Fe^{3+} by lowering the Fe^{3+} content thereof to less than 0.1μM characterized in that said medium is contacted with an insoluble siderophoric composition and thereafter said siderophoric composition loaded with Fe^{3+} is separated from said medium, said insoluble siderophoric composition comprising:

(1) one or more organic siderophoric compounds covalently fixed to the surface of

(2) a suitable insoluble carrier, said organic siderophoric compounds possessing one or more coordinating sites capable of chelating Fe^{3+}

4,585,560
INHIBITION OF INORGANIC AND BIOLOGICAL $CACO_3$ DEPOSITION BY A POLYSACCHARIDE FRACTION OBTAINED FROM $CACO_3$-FORMING ORGANISMS

C. Steven Sikes, Mobile, Ala., and A. P. Wheeler, Clemson, S.C., assignors to University of South Alabama, a Public Body Corporate, Mobile, Ala.

Filed Dec. 19, 1983, Ser. No. 563,252

Int. Cl.[4] C02F *5/10*

U.S. Cl. 210—698 **12 Claims**

1. A method of inhibiting the formation of $CaCO_3$-containing deposits on a surface, comprising applying to said surface a composition comprising 10^{-4} μg/ml–1,000 μg/ml of a polysaccharide-containing fraction substantially devoid of proteinaceous material, isolated from a $CaCO_3$-containing tissue obtained from a $CaCO_3$-forming organism;

wherein the polysaccharide-containing fraction is obtained from the $CaCO_3$-containing tissue by a method comprising the step of placing said tissue in contact with an aqueous solution selected from the group consisting of 0.001–30 g/100 ml of solution of a calcium chelating agent, 0.001–20 g/100 ml or ml/100 ml of solution of a weak organic acid or an inorganic acid wherein the pH of said solution is maintained at about 1–5 during the isolation of said fraction, for an appropriate length of time.

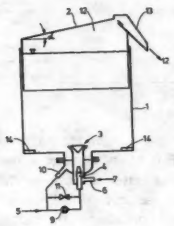
4,585,561
FLOTATION PROCESS FOR THE CONTINUOUS RECOVERY OF SILVER OR SILVER COMPOUNDS FROM SOLUTIONS OR DISPERSIONS

Marko Zlokarnik, Cologne; Georg Schindler, Leverkusen; Günther Koepke, Odenthal, and Werner Stracke, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 516,530, Jul. 25, 1983, abandoned. This application Apr. 8, 1985, Ser. No. 721,125

Int. Cl.[4] C02F *1/24*

U.S. Cl. 210—705 **10 Claims**



1. A method of continuous separation of silver or silver compounds from protein containing dispersions of silver or silver compounds containing at least about 100 ppm of gelatine which comprises the steps of

adjusting the pH of the dispersion at or about the isoelectric point of the gelatine,

forming flocks consisting essentially of the gelatine and silver or silver compounds by maintaining the pH of the dispersion at or about said isoelectric point in the presence of an effective amount of a cationically active polyelectrolyte to aid in separating said flocks,

and injecting finely divided inert gas bubbles into the dispersion and separating flocks from the remaining dispersion by flotation.

4,585,562
SELF-CONTAINED SEWAGE WASTE DISPOSAL SYSTEM

Kenneth J. De Graw, Montvale; William R. Bocchini, Wycoff; Brian Wilcockson, Wayne; Armen Bogossian, Teaneck; Robert J. Uhl, Wayne; Earl E. Nause, Bellville, and Ernest R. Ramirez, Far Hills, all of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 320,654, Nov. 12, 1981, Pat. No. 4,519,103. This application Feb. 8, 1984, Ser. No. 578,364

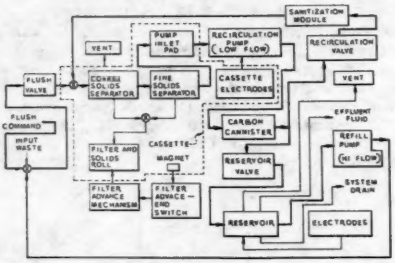
The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.[4] B01D *17/12;* C02F *1/00*

U.S. Cl. 210—805 **16 Claims**

1. A method for disposing of sewage waste within a self-contained system comprising the steps of: providing a toilet bowl capable of receiving human waste and fluid for diluting the waste, placing a removable filter cassette in alignment and in communication with the toilet bowl, flushing the bowl and dumping the contents into the filter cassette, filtering the fluid in the filter cassette and separating coarse and fine particles of solid material from the fluid received from the bowl, storing the solid material in a compact manner in the cassette for subsequent disposal upon removal of the cassette from alignment with the toilet bowl, locating a reservoir exteriorly of the cassette and interconnected with the cassette in a manner which provides for the immediate removal of filtered fluid to

the reservoir after separation from the solid material, transporting fluid through interconnected conduits to fill the bowl after a flush, to transport filtered fluid from the filter cassette to a position for recirculation and after recirculation, to the reservoir for storage and reuse, and removing and controlling the



passage of fluid in a predetermined sequence to facilitate the collection and disposal of sewage waste including immediate removal of filtered material from the cassette to the reservoir for storage and reuse thereof in the next operational sequence without danger of contactings the storage material in the cassette.

4,585,563

GRANULAR DETERGENT COMPOSITIONS CONTAINING ORGANO-FUNCTIONAL POLYSILOXANES

Alfred Busch, Strombeek-Bever, Belgium, and Sardelis Kosmas, Athens, Greece, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 8, 1985, Ser. No. 689,627

Claims priority, application United Kingdom, Jan. 13, 1984, 8400899

Int. Cl.[4] D06M *15/643, 13/34*

U.S. Cl. 252—8.8 **8 Claims**

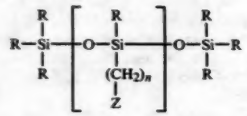
1. A particulate built detergent composition capable of providing desirable textile benefits, inclusive of softening, comprising:

(a) from 1% to 30% by weight of a surface-active agent;

(b) from 4% to 40% by weight of a detergent builder; and,

(c) optional ingredients inclusive of silicone suds regulant and cationic fabric softeners, containing

(d) from 0.05% to 5% by weight of an organo-functional poly-di-C_{1-4} alkyl siloxane textile treatment agent having the general formula:

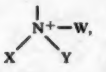


wherein

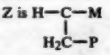
R = C_{1-4}-alkyl; n is an integer from 1 to 6;

Z is

whereby X and Y are, selected independently, —H; —C_{1-30}-alkyl; —C_6aryl; —C_{5-6}-cycloalkyl; —C_{1-6}—NH_2; —CO—R; with the proviso that the nitrogen can be quaternized such as to represent



whereby W can be selected from X or Y; or



whereby P and M are —COOH; —CO—NR'2; or C_{1-2}-alkyl;

with the further provisio that the degree of substitution, i.e., the molar proportion of silicones carrying a substituent other than a C_{1-4}-alkyl group to total silicones is in the range from 0.01 to 0.7.

4,585,564

COLD ROLLING OIL FOR STEEL SHEET

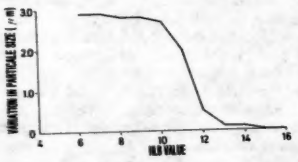
Eisuke Tohmata; Ryoichiro Takahashi; Sakae Sonoda; Shoji Okamoto, all of Yokohama, and Osamu Furuyama, Ichikawa, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Japan

Filed Jun. 15, 1984, Ser. No. 620,876

Claims priority, application Japan, Jun. 17, 1983, 58-108932

Int. Cl.[4] C10M *141/02*

U.S. Cl. 252—32.5 **12 Claims**



1. A cold rolling oil composition for steel sheets consisting essentially of (1) cold rolling oil and (2) cationic high-molecular compound and 0.1–5% of nonionic surfactant having an HLB value of at least 12 as emulsifying and dispersing agents.

4,585,565

METALWORKING LUBRICANT COMPRISING MINERAL OIL AND ALKOXYALKYL ESTER

Mei-Yuan Tsai, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 23, 1984, Ser. No. 674,286

Int. Cl.[4] C10M *1/06*

U.S. Cl. 252—49.5 **20 Claims**

1. A lubricant emulsion comprising

(a) about 90–98 wt % water, and

(b) about 2–10 wt % of a lubricant composition emulsified in the water, said composition comprising about 60–95 wt % mineral oil and about 5–40 wt % of an alkoxyalkyl ester having the formula $R_2COO(CH_2CH_2O)_nR_1$ wherein n = 1 or 2, R_1 is a C_1 to C_8 alkyl group and R_2 is a C_7 to C_{19} alkyl or alkenyl group.

4,585,566

CARBONATE TREATED DISPERSANTS

Robert H. Wollenberg, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 21, 1984, Ser. No. 673,963
Int. Cl.[4] C10M *133/16, 133/06*
U.S. Cl. 252—51.5 A 15 Claims

1. A product prepared by the process which comprises reacting at a temperature sufficient to cause reaction a polyoxyalkylene polyamine dispersant having at least one primary or secondary amine group with a cyclic carbonate and wherein the molar charge of cyclic carbonate to the basic nitrogens of the polyoxyalkylene polyamine is from about 0.2:1 to about 10:1.

4,585,567

PURIFICATION OF FLUORINATED LUBRICANTS FREE FROM HYDROGEN

Hannelore Strohbach, Cologne, Fed. Rep. of Germany, assignor to Montefluos S.p.A., Milan, Italy

Continuation of Ser. No. 541,253, Oct. 12, 1983, abandoned.
This application Mar. 15, 1985, Ser. No. 712,119
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1982, 3237930
Int. Cl.[4] C10M *105/52;* B01D *21/01*
U.S. Cl. 252—58 9 Claims

1. A process for the purification of fluorinated lubricants free from hydrogen, from mineral oils, characterized in that the lubricant to be purified is dissolved in a chlorofluorinated hydrocarbon, a grease solvent selected from the group consisting of gasoline, benzene, toluene and hexane is added to the resulting solution, the purified lubricant thereby precipitated is separated and is subjected to gasification for removing the residual solvent.

4,585,568

PLATE-LIKE BARIUM FERRITE PARTICLES FOR MAGNETIC RECORDING AND PROCESS FOR PRODUCING THE SAME

Norimichi Nagai; Nanao Horiishi, both of Hiroshima; Masao Kiyama, and Toshio Takada, both of Kyoto, all of Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Mar. 14, 1984, Ser. No. 589,350
Claims priority, application Japan, Mar. 26, 1983, 58-50800
Int. Cl.[4] C04B *35/26*
U.S. Cl. 252—62.59 13 Claims

10. Plate-like barium ferrite particles for magnetic recording, represented by the formula $BaCo_xTi_xFe_{12-2x}O_{19}$ wherein x is 0.1 to 0.5, having BET specific surface area of 20 to 70 m^2/g and average particle diameter of 0.05 to 0.3 μm, and showing magnetization of larger than 30 emu/g in the magnetic field of 10 KOe and coercive force of 300 to 1,000 Oe, produced by autoclaving an aqueous highly alkaline suspension containing Fe(III), Co(II), Ti(IV) and Ba ions at a temperature of 250° to 320° C., the atomic ratio of total amount of Co(II) and Ti(IV) to the amount of Fe(III) being 0.017:1 to 0.09:1, the amount of Co(II) being the same as that of Ti(IV) and the atomic ratio of Ba ions to the total sum of Fe(III), Co(II) and Ti(IV) being 1:7 to 1:9.

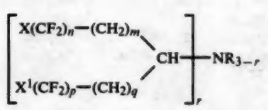
4,585,569

HEAT PUMPS

Richard L. Powell, Winsford, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Dec. 24, 1984, Ser. No. 685,781
Claims priority, application United Kingdom, Jan. 4, 1984, 8400098
The portion of the term of this patent subsequent to Sep. 17, 2002, has been disclaimed.
Int. Cl.[4] C09K *5/04*
U.S. Cl. 252—69 5 Claims

1. An absorption heat pump wherein the working fluid is a fluoroalkylamine of the formula:



(I)

wherein each of X and X^1, independently, represents hydrogen or fluorine,
R represents hydrogen or a lower alkyl radical,
n represents an integer from 1 to 4, each of m and q represents an integer from 0 to 2,

represents an integer from 0 to 4 provided that p is not zero when X^1 is fluorine, and
r represents an integer from 1 to 3, the fluoroalkylamine having a maximum of 6 carbon atoms
and the solvent is a phenol

4,585,570

BLEACHING COMPOSITIONS

Charles R. Nelson, Wetheral, Nr Carlisle, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Dec. 6, 1984, Ser. No. 678,972
Claims priority, application United Kingdom, Dec. 15, 1983, 8333426
Int. Cl.[4] A62D *5/00;* C11D *7/54;* D06L *3/00*
U.S. Cl. 252—102 11 Claims

1. A thickened bleach composition which comprises water, an alkali metal hypochlorite and an organic thickening component comprising one or more amine oxides and one or more amines wherein the weight ratio of amine oxide to amine is in the range of 3:1 to 29:1.

4,585,571

DEICING COMPOSITIONS

Stanley H. Bloom, Dallas, Tex., assignor to Michael A. Bloom, Dallas, Tex.

Filed Mar. 15, 1985, Ser. No. 712,681
Int. Cl.[4] C09K *3/18*
U.S. Cl. 252—70 7 Claims

1. A deicing composition which comprises
(a) from 75–99.99 volume % of an alkylene polyol selected from the group consisting of alkylene glycols having 2 to 3 carbon atoms, dialkylene glycols having 2 to 3 carbon atoms, oxyalkylene glycols having 4 to 6 carbon atoms, and mixtures thereof;
(b) from greater than zero to less than 1 in 7,500 volume parts of the fluid of an anionic surfactant which forms a hydrophobic monolayer on metallic surfaces selected from the group consisting of saturated and unstaturated fatty acid diamines having carbon chains from 4 to 40 and mixtures thereof;
(c) from greater than zero to less than 1 in 7,500 volume parts of the fluid of a hydrophilic wetting agent which associates with the hydrophobic monolayer selected from the group consisting of mono and polyalcohol amines; and
(d) from 0.01–25 volume % of the fluid of a coupling agent

which associates with the hydrophobic monolayer and the hydrophilic wetting agent (c) selected from the group consisting of soaps, sulfated soaps, sulfated amides, sulfated alcohols, sulfated ethers, sulfated carboxylic acids, petroleum sulfonates, sulfonated aromatic hydrocarbons, sulfonated aliphatic hydrocarbons, sulfonated aromatic-aliphatic hydrocarbons, sulfonated amides, sulfonated ethers, acylated amino acids and acylated polypeptides.

4,585,572

REVERSIBLE PHASE CHANGE COMPOSITION FOR STORING THERMAL ENERGY

George A. Lane; Harold E. Rossow, and Arthur S. Teot, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 11, 1983, Ser. No. 540,726

Int. Cl.[4] C09K *3/18*

U.S. Cl. 252—70 **11 Claims**

1. A thermal energy storage material comprising at least one hydrated inorganic salt having a phase change transition temperature in the range of from greater than about 0° C. to about 140° C., wherein said hydrated inorganic salt or mixture of salts undergoes segregation of its chemical components during repeated cycles of freezing and thawing, and a surface active thickening agent in an amount sufficient to form throughout the storage material a micelle structure of the type that thickens the storage material to prevent said segregation, wherein said surface active thickening agent is selected from the group consisting of:

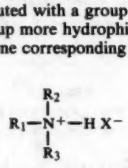
(a) an amine corresponding to the formula

wherein

R_1 is an aliphatic group having from about 16 to about 26 carbon atoms wherein said aliphatic group may be branched or straight chained and may be saturated or unsaturated;

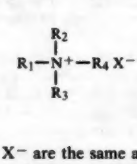
R_2 and R_3 are each independently, hydrogen or a C_1 to about C_6 aliphatic group which may be branched or straight chained, saturated or unsaturated and which may be substituted with a group which renders the R_2 and/or R_3 group more hydrophilic;

(b) salts of said amine corresponding to the formula



wherein

R_1, R_2 and R_3 are the same as defined hereinbefore and X^- is an inorganic or organic salt forming anion; or (c) a quaternary ammonium salt of said amine corresponding to the formula



wherein

R_1, R_2, R_3 and X^- are the same as hereinbefore defined and R_4 independently constitutes a group which has previously been set forth for R_2 and R_3, none of R_1, R_2, R_3 or R_4 are hydrogen, and the R_2, R_3 and R_4 groups of the amine salt and quaternary ammonium salt may be formed into a heterocyclic five- or six- member ring structure which includes the nitrogen atom of the amine.

4,585,573

HEAT STORAGE MATERIAL AND PROCESS FOR PRODUCING THE SAME

Michio Yanadori, Hachioji; Seigo Miyamoto, Takahagi, and Keiichi Koike, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 7, 1982, Ser. No. 447,678

Claims priority, application Japan, Dec. 9, 1981, 56-196787; Feb. 10, 1982, 57-18713

Int. Cl.[4] C09K *5/06*

U.S. Cl. 252—70 **9 Claims**

4. A process for producing a heat storage material, which comprises adding 52 to 65% by weight of industrial grade calcium chloride containing 70–76% by weight anhydrous calcium chloride, 0.5–4% by weight sodium chloride, impurities including sludge, and 17–24% by weight water, to water in a vessel, heating the resulting mixture at a temperature of 55°–80° C. for a time of at least one hour to precipitate impurities unsuitable for a heat storage material in the lower part of the vessel and to improve transparency, and then taking out the supernatant liquid in the vessel to give a composition, as said heat storage material, comprising anhydrous calcium chloride in a concentration of 36.44–49.4% by weight and sodium chloride in a concentration of 0.26–2.6% by weight, the balance being water, such material having a stable melting point and not having calcium chloride precipitate therefrom while used as a heat storage material.

4,585,574

ANTHRAQUINONE DYESTUFFS, PROCESSES FOR THEIR PREPARATION, THEIR USE, AND LIQUID-CRYSTALLINE MATERIALS CONTAINING ANTHRAQUINONE DYESTUFFS

Martin Blunck, Cologne; Uwer Claussen, and Rütger Neeff, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

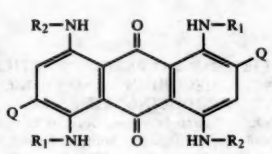
Filed Nov. 25, 1981, Ser. No. 324,919

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046904

Int. Cl.[4] C09K *3/34*; C09B *1/20, 1/54, 1/58*

U.S. Cl. 252—299.1 **22 Claims**

1. An anthraquinone dyestuff of the formula



wherein

R_1, R_2 denote hydrogen; C_1–C_6-alkyl; C_3–C_7-cycloalkyl; unsubstituted phenyl; phenyl which is substituted by C_1–C_4-alkyl, cyclohexyl, C_1–C_4-alkoxy, (C_1–C_4-alkoxy)-carbonyl and (C_1–C_4-alkyl)-carbonyl; naphthyl; benzyl; phenethyl and

Q denotes an —OR′, —SR′, —CH=N—R′,

—CHO or —SO_2—O—R′ radical, wherein

R′ represents unsubstituted phenyl or phenyl which is substituted by C_1–C_{10}-alkyl, C_1–C_6-alkoxy, cyclohexyl, chlorine, bromine, cyano-C_1–C_4-alkyl, C_1–C_4-alkylthio, phenoxy, phenylthio, hydroxyl, cyano, mono- and di-C_1–C_4-

alkylamino, phenylamino, mono- and di-C_1–C_4-alkylaminosulphonyl, phenylaminosulphonyl and hydroxyphenylaminosulphonyl; naphthyl; benzyl, phenethyl; an unsubstituted 5-membered or 6-membered heterocyclic ring, containing one to three heteroatoms from the group consisting of O, N and S, which ring can be substituted by C_1–C_4-alkyl or phenyl, and to which ring one or two benzene rings can be fused; such dyestuff excluding the formula in which R_1 and R_2 denote hydrogen and Q denotes phenoxy.

4,585,575

2-SUBSTITUTED-6-(5-SUBSTITUTED-2-PYRIMIDINYL)-NAPHTHALENES

Shigeru Sugimori, Fujisawashi; Toyoshiro Isoyama, Yokohamashi; Yasuyuki Goto, Yokohamashi, and Tetsuya Ogawa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

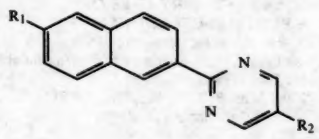
Filed Dec. 18, 1984, Ser. No. 683,162

Claims priority, application Japan, Jan. 11, 1984, 59-3122

Int. Cl.[4] C09K *3/34;* **G02F** *1/13;* **C07D** *239/00, 239/02*

U.S. Cl. 252—299.61 **17 Claims**

1. A 2-substituted-6-(5-substituted-2-pyrimidinyl)naphthalene expressed by the general formula



(I)

wherein R_1 represents an alkyl group or an alkoxy group, each having 1 to 10 carbon atoms and R_1 represents cyano group or an alkyl group having 1 to 10 carbon atoms.

4,585,576

LIQUID-CRYSTAL NEMATIC SUBSTANCES

Dietrich Demus; Horst Zaschke, both of Halle; Sabine Richter, Haldensleben; Hans-Joachim Deutscher, and Adelbert Wiegeleben, both of Halle, all of German Democratic Rep., assignors to VEB Werk für Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin, German Democratic Rep.

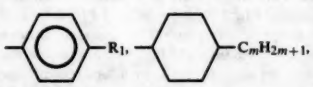
Filed Apr. 23, 1984, Ser. No. 602,832

Int. Cl.[4] C09K *3/34;* **C07C** *69/74, 61/29, 121/00;* **G02F** *1/13*

U.S. Cl. 252—299.62 **15 Claims**

1. Nematic liquid crystal compounds which are 7-alkyl-perhydrophenathren-2-carboxylic acids and esters thereof having the formula

wherein R is



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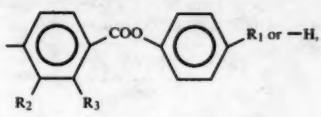


and wherein R_1 is $-C_mH_{2m+1}$, $-OC_mH_{2m+1}$, $-CH{=}C(CN)_2$, $-CN$, $-C_2H_4-CN$, $-NO_2$, $-F$, $-Cl$, $-Br$, or $-I$, and R_2 and R_3 are individually selected from $-H$, $-CH_3$, $-F$, $-Cl$ and $-CN$, and n and m are 1 to 14.

4,585,577

AEROSOL PROPELLANTS OF MONOCHLORODIFLUOROMETHANE, DIMETHYLETHER AND METHYLENE CHLORIDE

Philip L. Bartlett; John J. Daly, Jr., and John D. Sterling, Jr., all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 12, 1983, Ser. No. 560,728

Int. Cl.[4] C09K *3/30;* **C11D** *17/00;* **A61L** *9/04*

U.S. Cl. 252—305 **4 Claims**

1. An aerosol propellant composition consisting essentially of monochlorodifluoromethane and dimethyl ether where the monochlorodifluoromethane to dimethylether weight ratio is from 50:50 to 30:70, in admixture with methylene chloride, said composition having a vapor pressure in the range of about 50–60 psig at 70° F.

4,585,578

ELECTRICALLY CONDUCTIVE PLASTIC COMPLEX MATERIAL

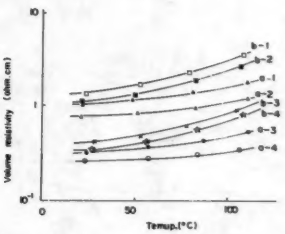
Kunio Yonahara; Hiroshi Miyagawa, both of Yokohama, and Shingo Aimoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 551,899

Claims priority, application Japan, Nov. 17, 1982, 57-200383; Jan. 19, 1983, 58-5795

Int. Cl.[4] H01B *1/06*

U.S. Cl. 252—511 **4 Claims**



1. An electrically conductive plastic complex material comprising:

a homogeneous mixture consisting of a synthetic base resin material being present in an amount of 30 to 70 percent by weight, an electrically conductive carbon black being present in an amount of 5 to 30 percent by weight and a graphite being present in an amount of 15 to 65 percent by weight;

said synthetic base resin material being at least one material selected from the group consisting of a polyethylene of more than 0.94 g/cm^3 density, a polypropylene of more than 0.90 g/cm^3 density, and an ethylene-propylene copolymer of more than 0.90 g/cm^3 density, and having a Melt Flow Rate of from 0.75 to 15 g/10 min.;

said electrically conductive carbon black having a particle

diameter of from 30 to 46 nm and a proportional surface area of from 245 to 1000 m^2/g, said graphite having a particle size of 200 mesh and below.

4,585,579

SUPPRESSION OF CORROSION IN CAUSTIC MANUFACTURING SYSTEMS

Tilak V. Bommaraju, Grand Island; William V. Hauck, North Tonawanda, and Vernon J. Lloyd, Lewiston, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 1, 1984, Ser. No. 656,194
Int. Cl.[4] C23F *11/06*
U.S. Cl. 252—387 **14 Claims**

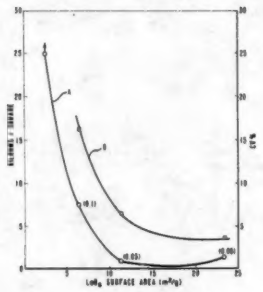
1. A process for suppressing the corrosion of nickel-based components which contact an aqueous caustic solution in the manufacture of caustic soda comprising adding from about 0.1 ppm to about 500 ppm of metal hydride to said aqueous caustic solution during the caustic manufacturing process.

4,585,580

THICK FILM COPPER COMPATIBLE RESISTORS BASED ON HEXABORIDE CONDUCTORS AND NONREDUCIBLE GLASSES

Paul C. Donohue, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1978, Ser. No. 934,269
Int. Cl.[4] H01B *1/00, 1/06*
U.S. Cl. 252—517 **33 Claims**



1. A thick film composition consisting essentially of inorganic powder solids content dispersed in an organic vehicle wherein the solids content consists essentially of:

A. 10–95 parts by weight, based on the weight of solids, of conductive material selected from the group consisting of LaB_6, YB_6, rare earth hexaborides, CaB_6, BaB_6 and SrB_6; and

B. 90–5 parts by weight, based on the weight of solids, of at least 98 mole %, based on the mole % of the oxide components of the glass, of nonreducible glass, each component having a Gibbs free energy of formation at 900° C. of less than approximately −78 kcal/mole per each metal-oxygen bond in the molecule;

wherein the composition is compatible with copper conductors and is fireable in substantially nonoxidizing atmosphere.

4,585,581

POLYMER BLENDS FOR USE IN PHOTOELECTROCHEMICAL CELLS FOR CONVERSION OF SOLAR ENERGY TO ELECTRICITY

Terje Skotheim, East Patchogue, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 448,115, Dec. 9, 1982, Pat. No. 4,488,943, which is a continuation-in-part of Ser. No. 386,666, Jun. 9, 1982, Pat. No. 4,442,185. This application Sep. 28, 1984, Ser. No. 655,489
Int. Cl.[4] A01B *1/06*
U.S. Cl. 252—518 **6 Claims**

1. A thin film providing improved electric charge transfer across said film comprising: a polymer blend of a highly conductive polymer selected from the group consisting of polypyrrole, polyindole, polyazulene, polythiophene, poly-N-p-nitro-phenylpyrrole, and polyfuran and a dry solid electron or ion exchange polymer electrolyte which is complexed with an electron acceptor compound; said blend being the major component of said film at one face thereof; and said dry solid polymer electrolyte being the major component of said film at the other face thereof; said polymer blend being more conductive than said dry solid polymer electrolyte.

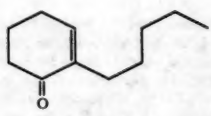
4,585,582

PERFUMERY USES OF 2-N-PENTYL-2-CYCLOHEXEN-1-ONE

Augustinus G. van Loveren, Ryebrook, N.Y., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Mar. 8, 1985, Ser. No. 709,917
Int. Cl.[4] A61K *7/46*
U.S. Cl. 252—522 R **5 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of intimately admixing with a perfume composition base, a cologne base or a perfumed article base, an aroma augmenting or enhancing quantity of the 2-n-pentyl-2-cyclohexen-1-one having the structure:



in recovered form.

4,585,583

IN SITU SOLIDIFICATION OF ION EXCHANGE BEADS

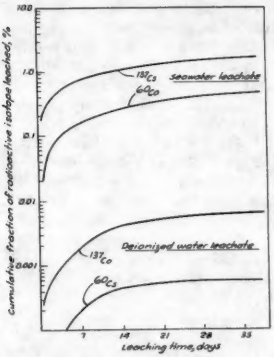
Keith Roberson, Freeland; Don L. Stevens, Sanford, and Harold E. Filter, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 24, 1982, Ser. No. 380,963
Int. Cl.[4] G21F *9/28, 9/34*
U.S. Cl. 252—628 **23 Claims**

1. A method of solidifying an ion exchange bed composed of ion exchange beads which has been employed to remove ionic species from an aqueous solution which comprises:

(a) introducing into and through the ion exchange bed contained in a container a sufficient quantity of a liquid solidification resin comprising a vinyl ester resin, an unsaturated polyester or a mixture of the two, and a suitable catalyst to cause the resin to cure, to intermix with and encapsulate said ion exchange beads in said container, said

resin mixture being flowed through the bed in plug flow, and



(b) curing said resin in situ in said container to thereby form a uniform solidified mixture of said beads and resin in said container.

4,585,584

PROCESS FOR PREPARING ROSIN ESTERS OF IMPROVED COLOR

Robert W. Johnson, Jr., Savannah, Ga., and Roger Logan, New Foundland, N.J., assignors to Union Camp Corporation, Wayne, N.J.

Filed Apr. 8, 1985, Ser. No. 721,304
Int. Cl.[4] C09F *1/04, 7/00;* C08L *93/04*
U.S. Cl. 260—104 **5 Claims**

1. In the esterification of tall oil rosin with pentaerythritol, the improvement, which comprises; carrying out the esterification in the presence of an activated carbon.

2. The improved esterification of claim 1 carried out in the presence of a catalytic proportion of an esterification catalyst.

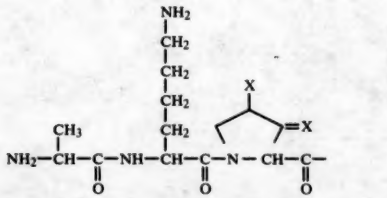
4,585,585

DECAPEPTIDES PRODUCED FROM BIOADHESIVE POLYPHENOLIC PROTEINS

J. Herbert Waite, Collinsville, Conn., assignor to University of Connecticut Research & Development Corporation, Farmington, Conn.

Filed Mar. 7, 1984, Ser. No. 587,132
Int. Cl.[4] C07C *103/52;* C12P *21/06*
U.S. Cl. 260—112.5 R **3 Claims**

1. Decapeptides of the formula:



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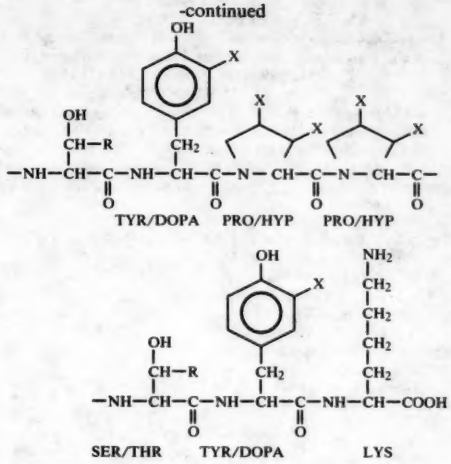


wherein each X is independently selected from the group comprising hydroxyl and hydrogen and wherein each R is independently selected from the group comprising hydrogen and methyl.

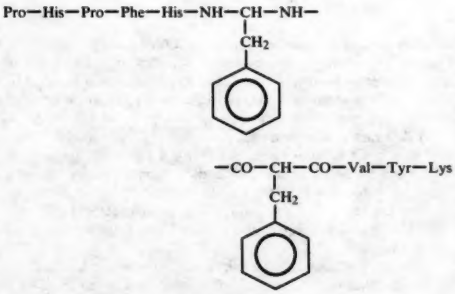
4,585,586

PARTIALLY RETRO-INVERTED DECAPEPTIDE AS A SPECIFIC RENIN INHIBITOR WITH HIGH RESISTANCE TO ENZYMATIC HYDROLYSIS

Romano Di Trapani; Massimo Pinori, and Antonio S. Verdini, all of Monterotondo, Italy, assignors to Ente Nazionale Idrocarburi, Rome, Italy

Filed May 22, 1984, Ser. No. 612,799
Claims priority, application Italy, May 25, 1983, 21282 A/83
Int. Cl.[4] C07C *103/52*
U.S. Cl. 260—112.5 R **4 Claims**

1. A peptide retro-inverted at the Phe-Phe bond, as a specific renin inhibitor and possessing high resistance to enzymatic hydrolysis and prolonged in vivo inhibition activity, of the following formula:



4,585,587
ANTIGENIC PEPTIDE COMPOUNDS

Erwin Goldberg, Evanston, and Thomas E. Wheat, Chicago, both of Ill., assignors to Northwestern University, Evanston, Ill.

Filed Oct. 19, 1984, Ser. No. 663,057

Int. Cl.[4] C07C *103/52*

U.S. Cl. 260—112.5 R **19 Claims**

1. Antigenic peptide compounds binding to LDH-C_4 antiserum, comprising the class of linear peptide compounds containing the antigenic domain V-L-D-M and being selected from the sequences of N-terminal to C-terminal amino acids represented by:

(a) Q-V-V-E-G-G-Y-E-V-L-D-M-K,
(b) Q-V-V-E-G-G-Y-E-V-L-D-M,
(c) V-V-E-G-G-Y-E-V-L-D-M-K,
(d) V-V-E-G-G-Y-E-V-L-D-M,
(e) V-E-G-G-Y-E-V-L-D-M-K,
(f) V-E-G-G-Y-E-V-L-D-M,
(g) E-G-G-Y-E-V-L-D-M-K,
(h) E-G-G-Y-E-V-L-D-M,
(i) G-G-Y-E-V-L-D-M-K,
(j) G-G-Y-E-V-L-D-M,
(k) G-Y-E-V-L-D-M-K,
(l) G-Y-E-V-L-D-M,
(m) Y-E-V-L-D-M-K,
(n) Y-E-V-L-D-M,
(o) E-V-L-D-M-K,
(p) E-V-L-D-M,
(q) V-L-D-M-K, and
(r) V-L-D-M.

wherein G represents glycine, and Q, V, E, Y, L, D, M, and K, respectively represent the L-amino acid forms of glutamine, valine, glutamic acid, tyrosine, leucine, aspartic acid, methionine, and lysine.

4,585,588
PENTACYCLIC COMPOUNDS

Laramie M. Gaster, Bishop Stortford, and Barry S. Orlek, London, both of England, assignors to Beecham Group p.l.c., Middlesex, England

Division of Ser. No. 472,218, Mar. 4, 1983, Pat. No. 4,504,480. This application Dec. 20, 1984, Ser. No. 684,038

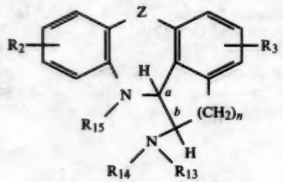
Claims priority, application United Kingdom, Mar. 5, 1982, 8206558

Int. Cl.[4] C07D *223/14*; A61K *31/495*

U.S. Cl. 260—239 D **2 Claims**

1. A compound of formula (XXV):

(XXV)



wherein R_2 and R_3 are the same or different and are hydrogen, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, halogen, or trifluoromethyl, and n is 1 or 2, the hydrogen atom bonded to the C_a carbon atom being trans to the hydrogen atom bonded to the C_b carbon atom and either:

(I) Z is methylene; and

R_{13} is $COOR_4$ or R_{10}, R_4 being C_{1-4} alkyl, phenyl or benzyl and R_{10} being C_{1-4} alkyl substituted by halogen or halocarbonyl or, C_{1-4} alkylcarbonyl, C_{3-7} cycloalkylcarbonyl, C_{3-7} cycloalkyl C_{1-3} alkylcarbonyl or halo C_{1-4} alkylcarbonyl, and R_{14} and R_{15} together are C_{1-3} alkylene, or

R_{13} is hydrogen, C_{1-7} alkyl, C_{3-7} cycloalkyl, C_{4-7} cycloalkenyl or C_{1-4} alkyl substituted by C_{2-7} alkenyl, C_{2-7} alkynyl, C_{3-7} cycloalkyl, hydroxy, thiol, C_{1-4} alkoxy, C_{1-4} alkylthio, carboxy, C_{1-4} alkoxycarbonyl, C_{1-4} alkanoyl, amino optionally substituted by one or two C_{1-4} alkyl or by C_{4-6} polymethylene optionally containing an oxygen or nitrogen atom, amino carbonyl optionally N-substituted by one or two C_{1-4} alkyl, or benzoyl or phenyl either being optionally ring-substituted by C_{1-4} alkyl, C_{1-4} alkoxy, halogen or trifluoromethyl or C_{1-4} alkoxycarbonyl, phenoxycarbonyl or benzyloxycarbonyl, and R_{14} and R_{15} are both hydrogen, or R_{14} is W and R_{15} is V, wherein one of V and W is hydrogen and the other is (CH_2) L_9, L_9 being a leaving group, or one of R_{14} and R_{15} is hydrogen and the other is hydroxylethyl, or R_{14} and R_{15} together are $(CG)_{s'}$—$(CH_2)_{t'}$—$(CO)_{u'}$, wherein s' and u' are 0 and t' is 0 to 3 such that s'+t'+u' is 1 to 3, with proviso that at least one of s' and u' is 1; or

(II) Z is CO or CHOH; and

R_{13} is as defined above, and R_{14} and R_{15} together are C_{1-3} alkylene.

4,585,589
WATER-SOLUBLE ALKANOYLOXY AND ALKOXYCARBONYLOXY RIFAMPICIN DERIVATIVES, PROCESS FOR ITS PREPARATION, INTERMEDIATES, AND ITS PHARMACEUTICAL COMPOSITION AS ANTIBACTERIALS

Adriano Malabarba; Bruno Cavalleri, both of Milan, and Pietro Ferrari, Paderno Dugnano, all of Italy, assignors to Gruppo Lepetit S.p.A., Italy

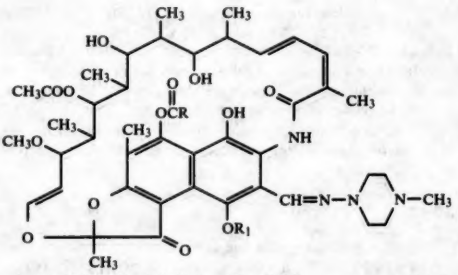
Filed Jun. 29, 1984, Ser. No. 626,358

Claims priority, application United Kingdom, Jul. 4, 1983, 8318072

Int. Cl.[4] C07D *498/08*

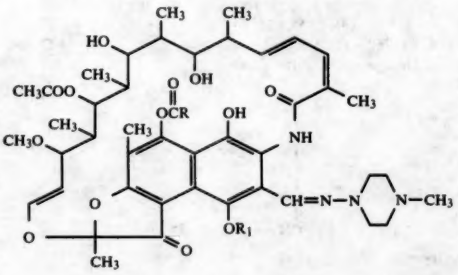
U.S. Cl. 260—239.3 P **9 Claims**

1. A compound of the formula



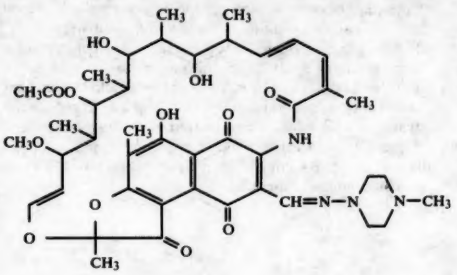
wherein R is a $(C_1–C_3)$alkyl or $(C_1–C_3)$alkoxy group; and R_1 is a hydrogen or a $(C_2–C_4)$alkanoyl group.

4. A process for preparing a compound of formula I

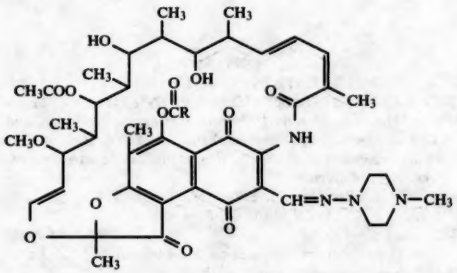


wherein R is a $(C_1–C_3)$alkyl or $(C_1–C_3)$alkoxy group; and R_1 is a hydrogen or a $(C_2–C_4)$alkanoyl group; which comprises

reacting 1,4-dideoxy-1,4-dihydro-3[[(4-methyl-1-piperazinyl-)imino]-methyl]-1,4-dioxorifampycin of formula II



with a compound of formula RCOX wherein R is as defined above and X strands for chlorine or bromine, in the presence of a hydrogen halide acceptor and reducing the obtained intermediate of formula III



wherein R is a defined above, with ascorbic acid, acylating the corresponding compound thus obtained, through reaction with a compound of formula R_1X' wherein R_1 is an alkanoyl acyl of from 2 to 4 carbon atoms and X' is chlorine or bromine in the presence of a hydrogen halide acceptor.

4,585,590

CYANOHYDRIN PROCESS

Verlan H. VanRheenen, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

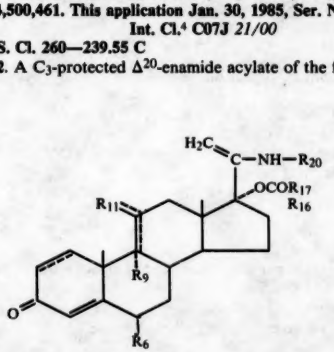
Continuation of Ser. No. 576,590, Feb. 3, 1984, Pat. No. 4,500,461. This application Jan. 30, 1985, Ser. No. 696,612

Int. Cl.[4] **C07J** *21/00*

U.S. Cl. 260—239.55 C **8 Claims**

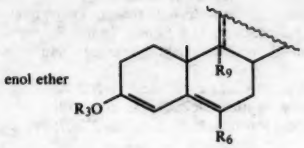
2. A C_3-protected Δ^{20}-enamide acylate of the formula

(IV A,B)

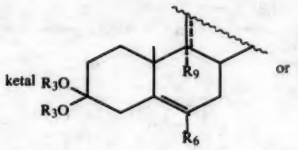


where the Δ^4-3-keto steroid (A) is protected as the

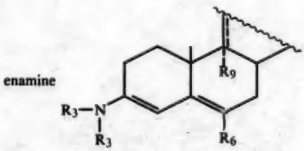
(Aa)



(Ab)

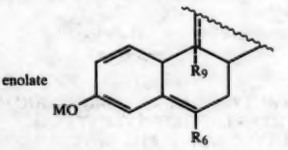


(Ac)



and where the $\Delta^{1,4}$-3-keto steroid (B) is protected as the

(Ba)



where

R_3 is alkyl of 1 thru 5 carbon atoms with the proviso that for the ketal (Ab) and the enamine (Ac), the R_3 groups can be connected and when connected may be connected by an oxygen or nitrogen atom;

R_6 is a hydrogen or fluorine atom or methyl group;

R_9 is nothing, a hydrogen, fluorine or oxygen atom which makes the C-ring

(a) $\Delta^{9(11)}$ when R_9 is nothing and

(b) 9β,11-epoxide when R_9 is an oxygen atom;

R_{11} is a hydrogen or oxygen atom, two hydrogen atoms, or α- or β-hydroxyl group which makes the C-ring

(a) $\Delta^{9(11)}$ when R_{11} is a hydrogen atom,

(b) 9β,11β-epoxide when R_{11} is an oxygen atom and ≡≡≡ between C_{11} and R_{11} is a single bond, and

(c) a ketone when R_{11} is an oxygen atom and ≡≡≡ between C_{11} and R_{11} is a double bond;

R_{16} is a hydrogen atom or methyl group;

R_{17} is a hydrogen atom alkyl of 1 thru 5 carbon atoms, phenyl substituted with 0 thru 2 chlorine, trichloromethyl, trifluoromethyl;

R_{20} is —OC—R_{20}' or —R_{20}'';

R_{20}' is alkyl of 1 thru 5 carbon atoms, phenyl, phenyl substituted 0 thru 2 chlorine atoms, methyl or nitro groups;

R_{20}'' is —$Si(CH_3)_3$ or —$Si(CH_3)_2C(CH_3)_3$;

M is a lithium, sodium, potassium, magnesium or calcium atom;

≡≡≡ is a single or double bond; and

~ indicates that the attached atom or group can be in either the α or β configurations.

4,585,591
17β-ETHYNYLSTEROIDS AND PROCESS FOR PREPARING SAME

Issei Nitta, Machida; Shinichiro Fujimori, Yokohama; Toshio Haruyama, Sagamihara, and Shinya Inoue, Yamato, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

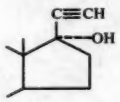
Filed Nov. 25, 1981, Ser. No. 325,026

Claims priority, application Japan, Dec. 10, 1980, 55-174065; Dec. 10, 1980, 55-174066; Feb. 23, 1981, 56-25307; Jul. 28, 1981, 56-118343

Int. Cl.⁴ C07J *1/00*

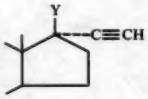
U.S. Cl. 260—397.4 **4 Claims**

1. A method for preparing a 17β-ethynylsteroid having the partial structural formula:



(III)

which comprises subjecting a steroid having the partial structural formula:



(II)

wherein Y is —ONO_2, —ONO or —OSO_2R where R is an alkyl or aryl,

to hydrolysis in the presence of a cuprous salt.

4,585,592
REDUCING THE CONTENT OF OLIGOMERIC CYCLIC ETHERS IN POLYOXYBUTYLENE POLYOXYALKYLENE GLYCOLS

Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 28, 1985, Ser. No. 706,472

Int. Cl.⁴ C09F *5/08*; C11C *3/00*; C07C *43/11*

U.S. Cl. 260—408 **7 Claims**

1. In a process for reducing the content of oligomeric cyclic ethers in a polyoxybutylene polyoxyalkylene glycol wherein a copolymer, obtained by copolymerization of tetrahydrofuran with a 1,2-alkylene oxide in the presence of a compound containing reactive hydrogen under the catalytic action of a bleaching earth, is subjected to distillation at an elevated temperature and under reduced pressure, the improvement which comprises:

treating the copolymer, prior to said distillation, with oxygen or an oxygen-containing gas at a temperature of from 20° to 110° C.; and

then carrying out the distillation under reduced pressure at a temperature above 200° C.

4,585,593
INTERESTERIFICATION PROCESS AND APPARATUS

Cornelis N. M. Keulemans, Rozenburg, and Gerard Smits, Rotterdam, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 422,778, Sep. 24, 1982, abandoned. This application Jan. 11, 1985, Ser. No. 690,820

Claims priority, application United Kingdom, Oct. 6, 1981, 8130135

Int. Cl.⁴ C11C *3/02*

U.S. Cl. 260—410.7 **23 Claims**

1. A process for the interesterification of a triglyceride oil employing a catalyst solution comprising a mixture of water, an alkali metal hydroxide and glycerine, characterized by performing the process as a continuous process comprising:

(i) bringing together streams comprising respectively the oil and the catalyst solution to form a confluent stream;

(ii) passing the confluent stream of the oil and catalyst solution through a spray nozzle into a low pressure chamber to form a homogenized mixture of the oil and the catalyst solution by subjection to energetic shear and to reduce the water content of the homogenized mixture so as to allow formation of an active catalyst component; and

(iii) holding the resulting mixture at a temperature sufficient to cause interesterification.

4,585,594
PREPARATION OF 4-SUBSTITUTED BUT-3-ENE-1-CARBOXYLIC ACIDS AND THEIR ESTERS

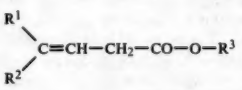
Walter Himmele, Walldorf; Werner Hoffmann, Neuhofen, and Lothar Janitschke, Kleinniedesheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 11, 1984, Ser. No. 680,514

Int. Cl.⁴ C07C *51/14, 67/36*

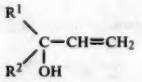
U.S. Cl. 260—410.9 R **6 Claims**

1. A process for the preparation of a 4-substituted but-3-ene-1-carboxylic acid or its esters of the formula I



(I)

where R^1 is an organic radical, R^2 is hydrogen or an organic radical, and R^1 and R^2 may furthermore be bonded to one another to form a 5-membered to 20-membered ring and should be inert under the reaction conditions described below, and R^3 is hydrogen or lower alkyl, by carbonylation of a derivative of allyl alcohol with the aid of a palladium halide, wherein an allyl alcohol II



(II)

is carbonylated with carbon monoxide at 50°–150° C. and under 200–700 bar,

(a) together with an alcohol III

$$R^{3'}—OH \qquad \text{(III)}$$

where $R^{3'}$ is lower alkyl, if a predominant amount of an ester I is to be prepared,

or

(b) without a further reactant where an acid I is to be prepared,

in the presence of an effective amount of complex of a palladium halide and a tertiary phosphine (IV).

4,585,595
OPTICALLY ACTIVE DERIVATIVES OF MERCAPTOISOBUTYRIC ACID AND METHODS OF PREPARATION THEREOF

Joannes P. M. Houbiers, Tegelen, Netherlands, assignor to Océ-Andeno B.V., Venlo, Netherlands

Filed Sep. 4, 1979, Ser. No. 71,934

Claims priority, application Netherlands, Sep. 7, 1978, 7809121

Int. Cl.⁴ C07C *153/023*

U.S. Cl. 558—255 **7 Claims**

1. Process for preparing in isolated, substantially pure form the D (-) stereoisomer of a compound of the formula

(I)

in which R is a H_3C—, $(CH_3)_3C$—,$(CH_3)_3CO$—, $C_6H_5CH_2O$—,C_6H_5,o-$NO_2C_6H_4$—, p-$NO_2C_6H_4$—, or p-$CH_3C_6H_4$—group, or a salt or a lower alkyl ester of such compound, characterized in that

(a) there is started from a racemic mixture of a compound of said formula (1) in which R=a C_6H_5 group,

(b) either (1) said mixture is dissolved in acetone and cinchonidine is added to it as resolving agent or (2) said mixture is dissolved in toluene and D(—)-2-aminobutanol-1 or a derivative thereof is added to it as resolving agent,

(c) the formed D(—)- salt of the resolving agent is crystallized out and isolated,

(d) if necessary, this salt is further purified of the L-isomer by recrystallization,

(e) the pure D(—)- salt is subjected to an acid hydrolysis process, in order to remove the resolving agent,

(f) the D(—)-S-benzoyl-β-mercaptoisobutyric acid thus liberated is won and, if necessary, purified.

4. The compound D(—)-3-t-butyloxythio-isobutyric acid.

4,585,596
PROCESS FOR THE PRODUCTION OF AROMATIC POLYESTER CARBONATES IN THE ABSENCE OF TERTIARY AMINES

Peter Tacke, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Sep. 6, 1984, Ser. No. 648,122

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 3333864

Int. Cl.⁴ C07C *68/00, 69/96;* C08G *63/62, 63/64*

U.S. Cl. 260—463 **4 Claims**

1. A process for the production of fully aromatic polyester carbonates from aromatic dicarboxylic acids and bis-chlorocarbonic acid esters of diphenols which comprises heating from 0.95 to 3 moles of bis-chlorocarbonic acid ester per mole of aromatic dicarboxylic acid, with said acid in the absence of an amine to temperatures from 130° to 250° C. either in the melt or in an organic solvent inert in the process having a boiling point above 130° C.

4,585,597
3-BENZYLIDENE-CAMPHORS, PROCESS FOR THEIR PREPARATION AND THEIR USE IN PROTECTION AGAINST UV RAYS

Gerard Lang, Saint Gratien; Madeleine Leduc, Paris, and Alain Malaval, Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

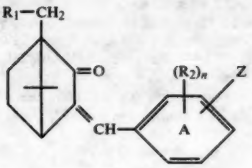
Filed Jun. 16, 1983, Ser. No. 505,090

Claims priority, application France, Jun. 15, 1982, 82 10425

Int. Cl.⁴ C07C *143/52*

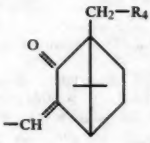
U.S. Cl. 260—507 R **14 Claims**

1. 3-Benzylidene-camphor derivative having the general formula:



(I)

in which R_1 denotes the radical $SO_3 \ominus M\oplus$, in which M is hydrogen, an alkali metal or the group $N\oplus(R_3)_4$, each R_3 independently denoting hydrogen or a C_1 to C_4 alkyl or hydroxyalkyl group; R_2 denotes a linear or branched C_1 to C_4 alkyl radical or a C_1 to C_4 alkoxy radical, n being O or an integer from 1 to 4 such that when n is 2 or more the R_2 radicals can be the same or different; and Z represents a group of the formula:



in which R_4 is as defined under R_1, with the proviso that the methylidene-camphor radical and the radical Z, which are attached to the aromatic nucleus A, are either in the meta position or in the para position relative to one another.

4,585,598
PHOSPHATE ESTERS OF HYDROXY-PYRENE-SULFONIC ACIDS

Horst Harnisch, Much, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

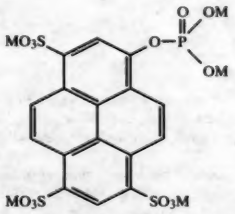
Filed Jan. 20, 1984, Ser. No. 572,722

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303871

Int. Cl.⁴ C07F *9/09;* C12Q *1/42*

U.S. Cl. 558—196 **2 Claims**

1. A compound of the formula



in which

M each independently is hydrogen, an alkali metal ion, an ammonium ion, or an ammonium ion substituted by up to four C_1 to C_5-alkyl and/or hydroxyalkyl radicals.

4,585,599

AIR CLEANING DEVICE

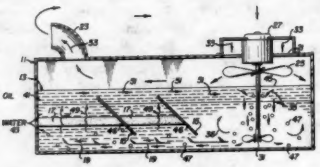
Yanush E. Czarno, P.O. Box 2064, Miami Beach, Fla. 33140

PCT No. PCT/US84/00243, § 371 Date Oct. 5, 1984, § 102(e) Date Oct. 5, 1984, PCT Pub. No. WO84/03230, PCT Pub. Date Aug. 30, 1984

Continuation-in-part of Ser. No. 467,655, Feb. 18, 1983, abandoned. This PCT application Feb. 17, 1984, Ser. No. 659,448

Int. Cl.[4] B01D *47/02*

U.S. Cl. 261—2 **13 Claims**



1. An air cleaner for cleaning air containing contaminants, comprising:

(a) a chamber having an air inlet and an air outlet;

(b) a first layer of liquid for scrubing air, said first layer of liquid disposed below said air inlet and air outlet;

(c) a second layer of liquid, the liquid of said second layer being substantially non-mixable with the liquid of said first layer, said first layer floating upon said second layer, said second layer acting to scrub said first layer of liquid;

(d) means for circulating the first liquid layer through said second liquid layer to thereby enhance scrubing of said first liquid by said second liquid; and

(e) means for driving said air-containing contaminants through said inlet and, thereafter, against said layer of first liquid and out said outlet.

4,585,600

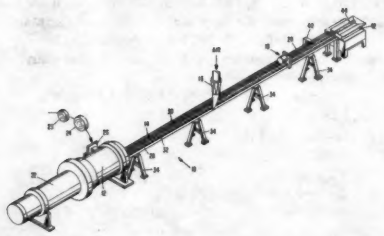
EXTRUSION, CONVEYANCE, AND CUTTING SYSTEM

Richard A. Rollyson, Radford; Peter D. Wesson, Blacksburg, and Paul S. Zerwekh, Radford, all of Va., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 28, 1984, Ser. No. 675,504

Int. Cl.[4] C06B *21/00*

U.S. Cl. 264—3.3 **12 Claims**



1. A method for automated manufacture of stick propellant, said stick propellant having precise selected lengths that are substantially equal each other and constant, said method comprising:

(a) shaping a mass of propellant into a continuous strand of said propellant by pushing said mass through a die;

(b) pneumatically conveying said strand received from said die past (i) a cutter adapted to cut crosswise through said strand penpendicular to the direction said strand travels, said cutter completing the cutting through said strand upon expiration of a predetermined cutter delay period that commences on cutter activation, (ii) a first sensor that is downstream from said cutter and (iii) a second sensor that is downstream from said first sensor by a distance that is greater than the distance said strand travels during said cutter delay period and to (iv) a stick transporter that is downstream from said cutter and transports a freshly cut stick of propellant resulting from cutting by said cutter away from that portion of said strand that follows said freshly cut stick;

(c) as said strand is passed by said first and second sensors,

(A) counting and storing the count of a first amount of equally spaced time pulses, said first amount being defined as the amount of said equally spaced time pulses between (i) the time when a forward end of said strand is sensed by said first sensor and (ii) the time when said forward end is first sensed by said second sensor, then

(B) signaling for said cutter activation at the end of a second amount of said equally spaced time pulses, said second amount being defined as the amount of said equally spaced time pulses between (i) the time when said first amount ends and (ii) the time when a third amount of said equally spaced time pulses ends where said third amount is defined as the number of said equally spaced time pulses in said first amount less the number of said equally spaced time pulses in said cutter delay period.

4,585,601

METHOD FOR CONTROLLING THE PRODUCTION OF ATOMIZED POWDER

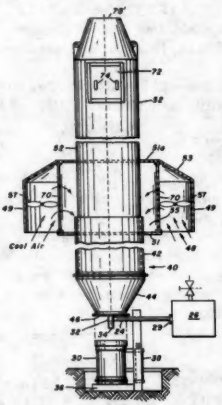
A. David Booz, New Kensington; Kalman E. Buchovecky, Oakmont; Walter S. Cebulak, New Kensington, all of Pa.; Ray A. Kuchera, and David D. White, Jr., both of Rockdale, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 413,511, Aug. 31, 1982, Pat. No. 4,466,786. This application May 3, 1984, Ser. No. 595,610

The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.

Int. Cl.[4] B29B *9/00*

U.S. Cl. 264—12 **9 Claims**



1. An improved method for the production of particulate metal comprising:

(a) providing a containment vessel having a sidewall extending to an endwall;

(b) introducing a source of metal external to said vessel through a nozzle means;

(c) mounting said nozzle means on said endwall, said nozzle means including a central bore and providing communication between said vessel and said external source of metal,

the sidewall and endwall cooperating with the nozzle means to seal off the interior of said vessel and metal particles therein from the area adjacent said source of molten metal;

(d) flowing a source of atomizing gas through said nozzle means into said vessel; and

(e) redirecting said atomizing gas into said central bore to remove depositions in said bore.

4,585,602

METHOD FOR FEEDING A NUMBER OF STRIPS OF MATERIAL INTO A SINGLE- OR MULTIPLE-EXTRUDER SYSTEM

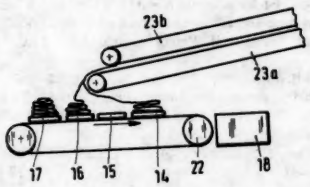
Gerd Capelle, Langenhagen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,198

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320203

Int. Cl.⁴ B29C *45/13*

U.S. Cl. 264—37 **3 Claims**



1. A method of feeding a plurality of strips of a constituent material into each extruder of a multiple extruder system utilized for producing profiles from rubber or thermoplastics material, each of said plurality of strips being supplied from different batches of such constituent material, with each of said batches potentially having different characteristics from another batch or batches of the same constituent material, each extruder having a material inlet and, in use, extruding one constituent of the profile, comprising the steps of:

(a) disposing a plurality of batches of the constituent to be fed into each extruder on a plurality of pallet means, each batch being in the form of a strip of material;

(b) conveying the laden pallets on pallet conveyor means, each extruder having associated with it a separate pallet conveyor means, said pallets for each extruder being conveyed in series in a direction towards said material inlet of each extruder, said pallet conveyor means having a first end adjacent said material inlet and a second end remote from said material inlet;

(c) simultaneously feeding at least two strips of material from separate pallets into strip guide means and thence into each extruder, said simultaneous feeding providing a more uniform and consistent constituent when fed into said extruder, said guide means being disposed above said pallet conveyor;

(d) removing empty pallets from said pallet conveyor means at said first end and in a direction transverse to the direction of feed of the pallets toward the material inlet of each extruder; and

(e) replacing said empty pallets by depositing new laden pallets on said pallet conveyor means at said second end thereof, each said extruder being charged from one side.

4,585,603

METHOD FOR CONTROLLING AN EXTRUSION LINE FOR FOAMED INSULATION CABLES INVOLVING USE OF A PLURALITY OF GENERATED AND MEASURED ELECTRICAL SIGNALS

Katsuhisa Furuta, Tokyo; Yoshinori Nakamura, Kawasaki, and Kazuhiko Asaka, Yokohama, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd, Kawasaki, Japan

Filed Mar. 8, 1983, Ser. No. 473,506

Claims priority, application Japan, Mar. 15, 1982, 57-40543; Mar. 15, 1982, 57-40544

Int. Cl.⁴ B29C *47/92, 47/02, 67/22*; G05B *11/32*

U.S. Cl. 264—40.6 **21 Claims**

1. A method for controlling an extrusion line for foamed insulation cables in which a foaming insulation compound of a polyolefin resin and a foaming agent is supplied to an extruder, and extruded and coated as a foamed insulation onto a continuously fed cable conductor at a temperature higher than a decomposition temperature of the foaming agent to produce a cable that is subsequently passed through a cooler unit for controlling the outside diameter and electrostatic capacity of the foamed insulation, wherein a plurality of generated and measured electrical signals designated by measured variables:

$$\begin{pmatrix} Y1 \\ Y2 \\ \cdot \\ Yl \\ \cdot \\ \cdot \\ Ym \end{pmatrix},$$

said measured electrical signals including a plurality of controlled electrical signals designated by controlled variables:

$$Y = \begin{pmatrix} Y1 \\ Y2 \\ \cdot \\ \cdot \\ Yl \end{pmatrix},$$

said controlled electrical signals including signals representing the outside diameter and the electrostatic capacity and condition electrical signals designated by condition variables affecting said controlled electrical signals, said condition electrical signals including signals representing a cylinder temperature of the extruder, a crosshead temperature of the extruder, a resin temperature and a resin pressure in the crosshead, said controlled electric signals being variable in predetermined correlation with a plurality of manipulated electrical signals designated by manipulated variables and utilized as input parameters, said manipulated electrical signals including a line speed of the extrusion line, a voltage applied to a preheater disposed in front of the extruder, and RPM of a screw in the extruder, a voltage applied to a cylinder heater in the extruder, a voltage applied to a crosshead heater, and distance between the cooler unit and the crosshead, said manipulated variables being:

$$U = \begin{pmatrix} U1 \\ \cdot \\ \cdot \\ \cdot \\ Unl \end{pmatrix}$$

(where l, n and m are positive integers of 2 or greater with n, m≧l), said method comprising the steps of:

controlling said controlled electrical signals so as to adjust said controlled variables into target values therefore:

$$YR = \begin{pmatrix} YR1 \\ \cdot \\ \cdot \\ \cdot \\ YRl \end{pmatrix}$$

by effecting an integrating action on each of variable factors:

$$Uc = \begin{pmatrix} Uc1 \\ \cdot \\ \cdot \\ \cdot \\ Ucn \end{pmatrix}$$

which are derived from:

$$\begin{pmatrix} C11 \ldots C1l \\ \cdot \quad \cdot \\ \cdot \quad \cdot \\ \cdot \quad \cdot \\ Cn1 \ldots Cnl \end{pmatrix} \begin{pmatrix} Y1-YR1 \\ \cdot \\ \cdot \\ \cdot \\ Yl-YRl \end{pmatrix}$$

where said matrix:

$$\begin{pmatrix} C11 \ldots C1l \\ \cdot \quad \cdot \\ \cdot \quad \cdot \\ \cdot \quad \cdot \\ Cn1 \ldots Cnl \end{pmatrix}$$

is predetermined so that said controlled extrusion line behaves in an optimum manner, to produce output electrical signals designated by:

$$Uc = \begin{pmatrix} Uc1 \\ \cdot \\ \cdot \\ \cdot \\ Ucn \end{pmatrix}$$

which serve as the manipulated electric signals respectively:

effecting feedback action on said plurality of measured electrical signals to obtain output electrical signals designated by:

$$UF = \begin{pmatrix} UF1 \\ \cdot \\ \cdot \\ \cdot \\ UFn \end{pmatrix}$$

said feedback action including applying said measured electrical signals to said manipulated signals

adding said outputs UF to said manipulation variables;

suspending said integrating action while at least a sum of said outputs Uc—said outputs UF which are added to said manipulation variables exceeds a predetermined range.

4,585,604

PROCESS FOR PREPARING AN AIR-PERMEABLE FILM

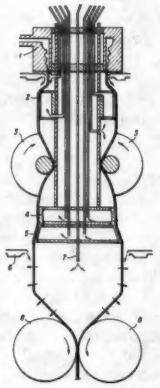
Katsumi Okuyama, and Hiroyasu Mizutani, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1984, Ser. No. 620,828

Claims priority, application Japan, Jun. 23, 1983, 58-113483; Jun. 23, 1983, 58-113484; Jun. 23, 1983, 58-113485; Jun. 23, 1983, 58-113486

Int. Cl.[4] B29C *67/20, 55/12, 55/28*

U.S. Cl. 264—41 **17 Claims**



1. A process for producing an air-permeable film, which comprises:

(a) biaxially stretching a tubular unstretched film of a composition comprising 42 to 87 vol % of a thermoplastic resin and 58 to 13 vol % of an inorganic filler along a truncated-conical mandrel;

(b) blowing a gas over the outside of the biaxially stretched tubular film to cool said film; and

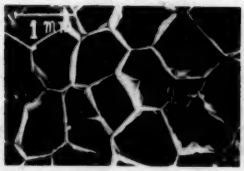
(c) simultaneously and, continuously blowing a gas under controlled pressure into the tube of the film such that the gas penetrates through the film around its entire circumference to the exterior of the film.

4,585,605

RIGID THERMOPLASTIC RESIN FOAM AND PROCESS FOR PREPARATION THEREOF

Takao Kadota, Kanuma; Masayuki Hashimoto, and Itsuo Hamada, both of Suzuka, all of Japan, assignors to Dow Chemical Company, Midland, Mich.

Division of Ser. No. 717,268, Mar. 19, 1985, Pat. No. 4,552,904.
This application Sep. 25, 1985, Ser. No. 780,117
Int. Cl.[4] B29C *67/22;* C08J *9/36, 9/38*
U.S. Cl. 264—51 1 Claim



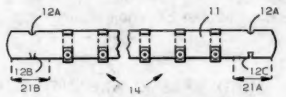
1. A process for the preparation of a rigid thermoplastic resin foam, which comprises heating a foam of a rigid thermoplastic resin for at least one minute in hot water maintained at a temperature higher than 85° C. or a water vapor atmosphere maintained at a temperature higher than 85° C. to expand the foam, then contracting the foam so that the volume is less than 70% of the volume of the final foam, and aging and expanding the foam in a drying chamber at an ambient temperature (T) of 40° C.≦T< the softening point of the resin for at least 24 hours, whereby is obtained a foam having a density (D) of 3 $Kg/m^3 \leqq D \leqq 17\ Kg/m^3$, a multi-cellular structure including many wrinkles having one end in the boundary portion where at least 3 cells are adjacent to one another and extending toward the central portion of the cell wall, an average cell diameter (A) of A≦2.0 mm, a closed cell ratio (B) of B≧50%, a kinetic spring constant (K) of $K \leqq 40 \times 10^6 N/m^3$, and a minimum value (C), among 60% compression set values determined with respect to three directions rectangular to one another, of C≦25%.

4,585,606

METHOD OF MAKING AN ENDLESS FORMS FEED TRACTOR BELT

Robert W. Cornell; James K. Howes, both of Matthews, N.C.; Walter B. Koteff, West Palm Beach, and Donald K. Rex, Highland Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 27, 1984, Ser. No. 655,132
Int. Cl.[4] B28B *1/48;* B29D *19/08;* B65H *20/20*
U.S. Cl. 264—156 3 Claims



1. A method of manufacturing an endless forms feed tractor belt comprising the steps of:

providing a thin, flexible band having a first side and a second side;

punching slots in at least one side of said band at longitudinal intervals so that a tab remains within each of said slots on at least one of said sides of said band except for at least one tabless slot at one end of said band;

molding drive members around said band at each of said slots except for said slots in an equal number of drive memberless intervals at each end of said band, said number of drive memberless intervals being equivalent to the quantity of said tabless slots at one end of said band, said tabs of said slots with said drive members having said tabs deflected into said drive members during molding and remaining deflected thereafter;

overlapping the ends of said band so that said drive memberless intervals at each end of said band coincide in pairs;

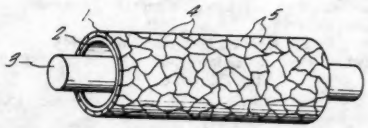
molding final drive members around said band at said slots of each pair of said coincided drive memberless intervals, said tabs of said slots of said coincided drive memberless intervals deflected into said drive members during molding and remaining deflected thereafter.

4,585,607

METHOD OF COVERING A MEMBER

Joseph J. Krackeler, Los Altos Hills, and Fred E. Weir, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 586,901, Jun. 16, 1975, Pat. No. 4,338,970.
This application May 28, 1982, Ser. No. 382,819
Int. Cl.[4] B32B *31/16*
U.S. Cl. 264—229 7 Claims



1. The method of covering a member comprising:

positioning over said member a recoverable tubular article comprising:

(a) a tubular sleeve held under tension in a radially expanded condition such that upon the release of the tension the sleeve tends to assume a smaller diameter and

(b) a restraint having an essentially tubular configuration bonded to said sleeve;

segmenting said restraint and

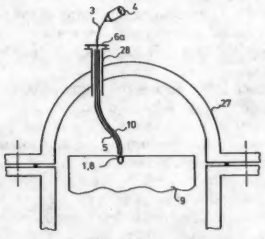
peeling said restraint from said sleeve to allow recovery of said sleeve onto said member.

4,585,608

DEVICE FOR THE DETERMINATION OF THE VIBRATIONS OCCURRING AT THE INTERNALS OF A REACTOR PRESSURE VESSEL

Bobby L. Day, Walldorf, Fed. Rep. of Germany, assignor to Brown Boveri Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 383,405
Int. Cl.[4] G21C *17/00*
U.S. Cl. 376—245 10 Claims



1. A device for the determination of the vibrations occuring

at the internals of a reactor pressure vessel by means of a deflection detector connected to the internals, comprising:

a. a housing and a deflection detector arranged therein;

b. a flexible rod attached to said housing;

c. a guide tube that extends to the internals through the wall of said vessel which ends in a receptacle adapted to receive said housing and rigidly connected to the internals wherein the end of the guide tube facing away from the pressure vessel is cup-shaped and sealed by means of a cover; and

d. said housing being mobile within said guide tube;

e. a pipe penetrating the reactor pressure vessel and sealed from the outside having said guide tube connected through said pipe with the end of said guide tube in said pressure vessel facing away from said pipe connected to the receptacle; and

f. a cable routed via the flexible rod and through the cover for transmitting the measuring results of the deflection detector to a plug-in coupler.

4,585,609

METHOD OF MONITORING AN ELECTRICITY GENERATING STATION EQUIPPED WITH A NUCLEAR REACTOR

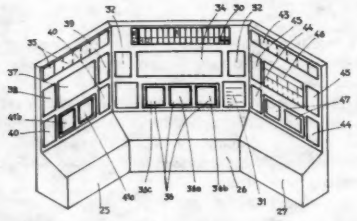
Guy Le Rat, Torcy, France, assignor to Framatome & Cie, Courbevoie, France

Filed Dec. 15, 1982, Ser. No. 449,948

Claims priority, application France, Dec. 31, 1981, 81 24594

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—245 **4 Claims**



1. Method of monitoring an electricity generating station equipped with a nuclear reactor, involving gathering quantitative or qualitative information, called "parameters", that can be defined, each time, by a unique numerical information, relating to the operation and to the state of the components of the power station, comparing these parameters with reference data corresponding to normal operation, and signalling the differences existing between the parameters and the reference data, the state of the reactor being defined at each moment by one situation selected from an assembly of predetermined situations corresponding to the various phases of operation or shutdown of the reactor, depending on the level of the power emitted by the core, the physical parameters of the primary fluid and their variation with time or the needs for action relating to the protection or safeguard of the reactor, wherein

(a) the type of operation of the reactor is defined at each moment by linking it to one of the predetermined situations;

(b) the useful parameters for monitoring the power station are grouped into sub-assemblies called "functions", each corresponding to the assembly of the parameters to be monitored when monitoring the performance of a particular and indispensable task in a power station for normal control or for performing an emergency action;

(c) the qualitative state of each of the parameters of each of the functions involved is determined according to a predetermined category describing its suitability for contributing to performing the function in the situation in question and representing a level of deterioration in relation to normal operation according to predetermined specifications;

(d) the most unfavorable state allocated to at least one of the parameters of each of the functions in question is allocated to this function;

(e) the overall qualitative state of the situation is determined as being the most unfavorable qualitative state allocated to at least one of the functions; and

(f) the information relating to the overall qualitative state of the situation, to the qualitative state state of each of the functions and to any change of qualitative state in any one of these functions is displayed.

4,585,610

APPARATUS FOR INSPECTING THE INTERIOR OF A REACTOR VESSEL

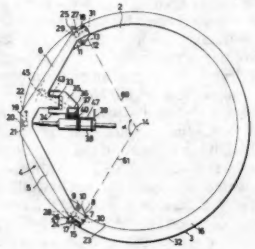
Björn Andersson; Alf Engding, both of Akersberga; Peter Schaub, Stockholm, and Andras Agoston, Täby, all of Sweden, assignors to Tekniska Rontgencentralen AB, Stockholm, Sweden

Filed Jul. 23, 1982, Ser. No. 401,358

Claims priority, application Sweden, Sep. 29, 1981, 8105754

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—249 **2 Claims**



1. An apparatus for inspecting a reactor vessel having a reactor hearth, the apparatus including a carriage provided with wheels and a drive means for moving the carriage around the rim of the reactor vessel opening,

a mast mounted on the carriage and extending downwardly into the reactor vessel substantially parallel to the center axis of the reactor vessel,

said mast being pivotally mounted on said carriage about a horizontal axis,

a stabilizing arm mounted on the mast and having a guide wheel at the end thereof engaging the wall of the reactor vessel, and

a viewing device mounted on the mast and adjustably movable along at least a portion of the height of the mast.

4,585,611

UNDERVESSEL ARRANGEMENT

Martin G. Perl, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.

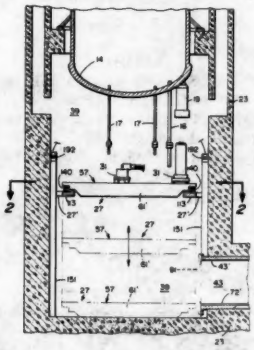
Filed Mar. 4, 1983, Ser. No. 472,020

Int. Cl.[4] G21C *19/00*

U.S. Cl. 376—260 **3 Claims**

1. In a nuclear reactor system including a pressure vessel and an undervessel support structured, a servicing arrangement located below said pressure vessel comprising; an undervessel servicing platform having at least two lateral extensions; at least two guide columns for receiving said lateral extensions of said servicing platform, said guide columns limiting the radial movement of said lateral extensions; a jackscrew in each of said guide columns, each penetrating an aperture in the lateral extension therein; a plurality of apertured plates fitted on each

said jackscrew for engaging and supporting the lateral extension penetrated by the jackscrew including an upper plate formed with a raised portion surrounding the aperture therein and engaging a complementary depression in the underside of the extension, a lower plate formed with an internally threaded collar engaging the threads of said jackscrew and means for preventing rotation of said upper and lower plates with said jackscrew, the aperture in said upper plate being greater in diameter than the diameter of said jackscrew for allowing limited lateral movement between said upper and lower plates; means for synchronously rotating each of said jackscrews for raising and lowering said servicing platform; and a stabliizer



mechanism for each jackscrew for restraining said jackscrew from bowing including a rod positioned parallel to said jackscrew and penetrating with sliding fit an aperture in said lateral extension; a stabilizer spacer secured to the lower end of said rod and having an aperture penetrated with sliding fit by said jackscrew, rollers mounted on said spacer engaging the guide column within which said jackscrew is located, and a head on the upper end of said rod for engaging said lateral extension when said servicing platform is raised a predetermined distance whereby said rod and said stabilizer spacer secured thereto are moved upward as said servicing platform is raised beyond said predetermined distance.

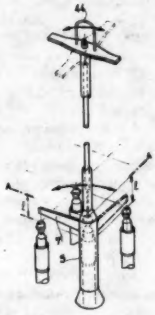
4,585,612

DEVICE FOR CHECKING THE DISCONNEXION OF THE CONTROL CLUSTERS OF A NUCLEAR REACTOR

Jean Coussau, Paris, and Hubert Genton, Lyons, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Jun. 6, 1983, Ser. No. 501,356
Claims priority, application France, Jul. 1, 1982, 82 11576
Int. Cl.[4] G21C *19/10*
U.S. Cl. 376—260 **5 Claims**

1. A device for checking the disconnexion of the actuating rods of the control clusters before the removal of the internal equipment of a nuclear reactor comprising, within a pit (10) forming a cooling pond, a vessel (1) closed by a removable cover and containing a core, a set of control clusters fitted individually vertically slidably in upper internal equipment forming a guide structure above the core, each cluster being fitted at its upper part with a removable fixing head (37) on the lower part (32) of an actuating rod (3) penetrating the cover upon which is supported a raising and lowering mechanism of the rod fitted slidably in a guide sleeve, said vessel (1) being able to be opened after shutdown of the reactor caused by lowering of the control clusters into a bottom position, the mechanism and the guide sleeves being removed first with the cover, then the actuating rods (3) disconnected one by one by means of a disconnecting tool suspended from a charging crane (2) consisting of a platform (20) transportable above the cooling pond (10) and fitted with a tool suspension member (23) and with means (22) for positioning the suspended tool vertically above each of the rods (3), which comprises a pole (4) of greater length then the distance between the platform and the level of the heads of the actuating rods, fitted at its upper part with means (44) of suspending and actuating the rotation of the pole about its vertical axis, and at its lower part with a bushing



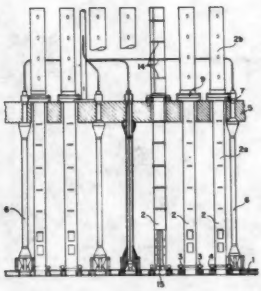
(5) for centering at a given level on the head of the actuating rod (3) and with an arm (7) extending transversely to the horizontal at the level of the heads (32) of the disconnected rods and of greater length then the distance between the axes of the clusters.

4,585,613

PROCESS FOR THE REPLACEMENT OF GUIDE PINS OF A GUIDING TUBE FORMING PART OF THE TOP INTERNAL EQUIPMENT OF A PRESSURIZED WATER NUCLEAR REACTOR, AND CORRESPONDING APPARATUS

Pierre Styskal, Thorens; Laurent Guicherd, Villeurbanne, and Georges Clar, Lyons, all of France, assignors to Framatome & Cie, Courbevoie, France

Filed Jun. 29, 1983, Ser. No. 509,116
Claims priority, application France, Aug. 6, 1982, 82 13751
Int. Cl.[4] G21C *19/00*
U.S. Cl. 376—260 **1 Claim**



1. Process for the replacement of the guide pins (3) of a guiding tube (2) forming part of the top internal equipment of a pressurized water nuclear reactor, said top internal equipment being disposed above a core of said reactor and containing vertical guide tubes (2) of great length for guiding control rods, said guide tubes being disposed vertically in line with certain core assemblies and consisting of a lower part (2*a*) resting on an upper core plate (1) in which are engaged guide pins (3) fastened to said lower part (2*a*) of said guide tubes, and of an upper part (2*b*) aligned with said lower part and resting on a horizontal support plate (5) connected to said upper core

plate by braces (6), said lower part (2*a*) and said upper part (2*b*) of said guide tube being independent and connected to said support plate (5) and to one another by bolts (10), comprising the steps of

(a) disposing said top internal equipment of the reactor under water in a storage bay, outside a vessel of said reactor;

(b) joining said lower and upper parts (2*a*, 2*b*) of said guide tube (2) together by introducing a rod (50) along the axis of said guide tube (2) and over its entire length;

(c) effecting axial clamping of said guide tube by clamping members (51, 52) fixed on said rod (50), at each of its ends, each of said clamping members bearing against one of said parts (2*b*, 2*a*) of said tube;

(d) removing said bolts (10) connecting said parts of said guide tube (2) and said support plate (5);

(e) extracting said guide pins (3) of said tube from their sockets in said upper top core plate (1) by effecting slight vertical displacement of said guide tube (2);

(f) taking up the entire guide tube (2) by a handling and transport means, while said lower and upper parts (2*a*, 2*b*) of said guide tube fastened together by means of said rod (50) and said clamping members (51, 52);

(g) decontaminating said guide tube (2);

(h) transporting said guide tube (2) to a dry treatment bay in which said guide pins (3) fastened to said lower part (2*a*) of said guide tube are replaced;

(i) transporting said guide tube (2) to an underwater storage bay for said internal equipment and replacing it in position in said internal equipment with the aid of said handling and transport means;

(j) inserting said guide pins (3) into their sockets in said upper core plate (1) by a thrust applied to said guide tube (2);

(k) joining said lower and upper parts (2*a*, 2*b*) of said guide tube by bolts (10) to said support plate (5); and

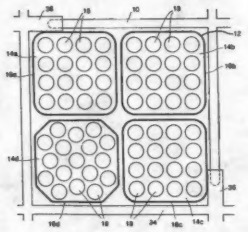
(l) removing said rod (50) and said clamp members (51, 52) from said lower and upper parts of said guide tube.

4,585,614

FUEL ASSEMBLY FOR NUCLEAR REACTOR

Sture Helmersson, Kolback, Sweden, assignor to AB ASEA-ATOM, Västerås, Sweden

Continuation-in-part of Ser. No. 315,595, Oct. 30, 1981, abandoned. This application May 21, 1984, Ser. No. 612,482
Claims priority, application Sweden, Nov. 5, 1980, 80077563
Int. Cl.[4] G21C *3/32*
U.S. Cl. 376—434 **6 Claims**



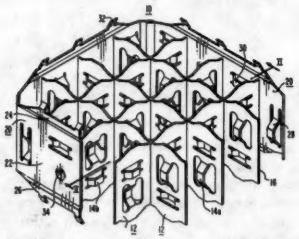
1. A fuel assembly having a substantially square cross-section, said fuel assembly comprising four subassemblies, each subassembly having only one bundle of vertical rods, each of said bundles including a plurality of fuel rods and at most one spacer holding rod, and comprising about one-fourth of the total number of fuel rods in said fuel assembly; each of said vertical rods having a vertical center line, the total number of said center lines within each of said at least one subassembly being equal to the total number of nodal points in a corresponding imaginary horizontal lattice, each of said center lines coinciding with a corresponding nodal point in said lattice, wherein said lattice comprises only seventeen nodal points, only twelve equilateral triangles and four squares, said triangles and said squares constituting sixteen smaller polygons arranged adjacent to each other without mutual overlap but having some sides in common and in such a way that they together cover the entire area, only, of a twelve-sided, equilateral, greater polygon, said seventeen nodal points coinciding only with the corners of said squares and the corners of said triangles said triangles being mutually equal, said squares being mutually equal, the side of said greater polygon being equal to the side of each of said smaller polygons, each of said four squares having one of its corner points coinciding with a central point in said relatively great polygon as well as with three corner points belonging to the remaining said squares.

4,585,615

NUCLEAR FUEL SPACER GRID WITH IMPROVED GRID STRAPS

Edmund E. DeMario, Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 9, 1983, Ser. No. 473,516
Int. Cl.[4] G21C *3/34*
U.S. Cl. 376—442 **22 Claims**



1. A grid, for the spacing of fuel rods in a nuclear reactor fuel assembly, comprising a plurality of interleaved grid straps arranged in an egg-crate configuration defining cells therein for the separate enclosure of each of said fuel rods, one of said cells having a longitudinal axis and having each of its associated said grid straps with at least one generally rigid protrusion projecting into said one cell for the spacing of an associated enclosed said fuel rod therein, with said one cell's said protrusions on a pair of non-opposing associated said grid straps generally closed to longitudinal coolant flow through said one cell and with said one cell's remaining said protrusions on the remaining associated said grid straps generally open to longitudinal coolant flow through said one cell.

4,585,616

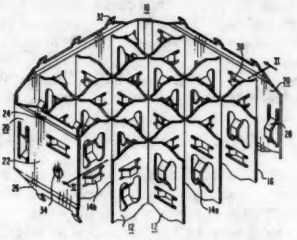
NUCLEAR FUEL SPACER GRID WITH IMPROVED OUTER STRAPS

Edmund E. DeMario, Penn Hills, and Ronald P. Knott, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 9, 1983, Ser. No. 473,515
Int. Cl.[4] G21C *3/34*
U.S. Cl. 376—442 **8 Claims**

1. A grid, for the spacing of fuel rods in a nuclear reactor fuel assembly, comprising: a plurality of interleaved grid straps arranged in an egg-crate configuration defining cells therein for the separate enclosure of each of said fuel rods; and four outer straps attached together in a generally square-shaped array surrounding the heightwise edges of said grid straps, said outer straps each having a central portion and a top and a bottom resilient lengthwise border portion, with the heightwise edges of said grid straps attached to said central portions

of their associated said outer straps and with said border portions extending vertically beyond and projecting horizontally



outwardly beyond their associated said central portions of their common said outer straps.

4,585,617

AMORPHOUS METAL ALLOY COMPOSITIONS AND SYNTHESIS OF SAME BY SOLID STATE INCORPORATION/REDUCTION REACTIONS

Michael A. Tenhover; Richard S. Henderson, both of Solon, and Robert K. Grasselli, Aurora, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 3, 1985, Ser. No. 751,704
Int. Cl.[4] B22F *7/00*
U.S. Cl. 419—5 **21 Claims**

1. A process for the synthesis of a substantially amorphous metal alloy which comprises contacting a high surface area support material with at least one precursor metal-bearing compound at a temperature below the crystallization temperature of the amorphous metal alloy to be formed so that metal from the precursor metal-bearing compound is disposed on the high surface area support and combined to form the substantially amorphous metal alloy.

4,585,618

CERMETS AND THEIR MANUFACTURE

Jean-Marie Fresnel, St. Genis; Pierre-Etienne Debély, Geneva, and Jean-Pierre Waefler, Troinex, all of Switzerland, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Feb. 15, 1984, Ser. No. 580,532
Claims priority, application European Pat. Off., Feb. 16, 1983, 83810065.9
Int. Cl.[4] B22F *1/00*
U.S. Cl. 419—12 **17 Claims**

1. A method of producing a ceramic-metal composite (cermet), comprising providing a bulk reaction mixture of particulate reactants capable of reacting to produce a sintered self-sustaining ceramic body, bringing said reaction mixture to a reaction temperature in contact with a mass of molten metal, and carrying out a reaction with the bulk reaction mixture in contact with the molten metal whereby said ceramic body produced by said reaction is infiltrated with the molten metal.

4,585,619

METHOD OF PRODUCING HIGH SPEED STEEL PRODUCTS METALLURGICALLY

Leif Westin, Söderfors, Sweden, assignor to Kloster Speedsteel Aktiebolag, Soderfors, Sweden

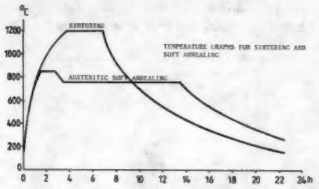
Filed May 6, 1985, Ser. No. 731,045
Claims priority, application Sweden, May 22, 1984, 8402752
Int. Cl.[4] B22F *3/24*
U.S. Cl. 419—28 **13 Claims**

1. Method for the powder metallurgical production of high speed products comprising

(a) soft annealing a starting high-speed steel powder in a first annealing step in a non-oxidizing environment

(b) mechanically fragmenting the soft annealed powder

(c) annealing the fragmented powder in a second annealing step at the austenitic temperature region of the steel in a non-oxidizing environment to improve the compactability of the fragmented powder by reducing its hardness and by forming aggregates of fragmented particles



(d) mechanically compacting the second annealed fragmented powder in a die to form a green body of the desired product shape

(e) sintering the green body in a non-oxidizing environment until communicating porosity has been eliminated and

(f) Subjecting the sintered body to hot isostatic compaction to full density.

4,585,620

WEAR-RESISTANT ALLOY FOR AN ATOMIC POWER PLANT

Hisato Kamohara, Yokohama; Tatsuyoshi Aisaka, Ebina, and Mituo Kawai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 9, 1982, Ser. No. 386,534
Claims priority, application Japan, Jun. 15, 1981, 56-90916
Int. Cl.[4] C22C *19/05*
U.S. Cl. 420—442 **7 Claims**

1. A wear-resistant alloy consisting essentially of, in terms of weight ratio, 10 to 45% of chromium, more than 5 to 15% of niobium, 4 to 20% of molybdenum, 0.3% to 2.0% of boron, and nickel as the remainder, said alloy having a degree of wear resistance rendering said alloy suitable for use in an atomic power plant.

4,585,621

VAPOR-DEPOSITED FILM OF SELENIUM OR SELENIUM ALLOY FOR ELECTROPHOTOGRAPHY

Osamu Oda; Arata Onozuka, and Akio Koyama, all of Toda, Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1984, Ser. No. 626,500
Claims priority, application Japan, Nov. 10, 1983, 58-209977
Int. Cl.[4] G03G *5/082*
U.S. Cl. 420—579 **2 Claims**

1. A vapor-deposited film of selenium or selenium alloy as a photoreceptor for electrophotography characterized in that said selenium or a selenium alloy contains phosphorus therein in an amount of not less than 0.5 ppm and not more than 1,000 ppm and adjusted to attain a desired contrast potential.

4,585,622

CHEMICAL MICROREACTOR HAVING CLOSE TEMPERATURE CONTROL

Woodford A. Bowe, Rising Sun, Md.; Robert Largione, Christiana, and Eugene J. Levy, Oxford, both of Pa., assignors to AE/CDS, Autoclave, Inc., Oxford, Pa.

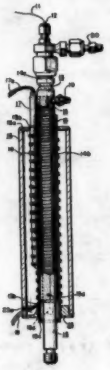
Filed Feb. 2, 1983, Ser. No. 463,339
Int. Cl.[4] F28D *21/00*; G01N *31/10*; G05D *23/02*
U.S. Cl. 422—50 **8 Claims**

1. Temperature-controlled microreactor apparatus comprising:

(a) central container means for receiving substances under study, said container having an outer surface,

(b) first sensing means within said container means for sensing the temperature therein,

(c) means disposed outwardly of said container means and in heat-conductive relation to the outer surface of said container means for cooling said container means, said cooling means including a generally tubular core surrounding said container, said tubular core having two ends and



means for circulating a coolant between said tubular core and said container,

(d) means outwardly of said cooling means for heating the region of said outer surface of said container, and

(e) second sensing means disposed in substantial contact with said core and also in substantial contact with said heating means for sensing the temperature in the region of the outer surface of said container and for sensing the temperature of said heating means.

4,585,623

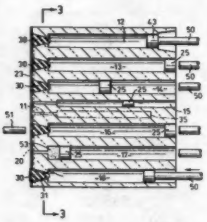
DEVICE FOR PERFORMING QUANTITATIVE CHEMICAL AND IMMUNOCHEMICAL ASSAYS

Howard M. Chandler, Orton, Canada, assignor to Allelix Inc., Mississauga, Canada

Continuation of Ser. No. 584,007, Feb. 27, 1984, abandoned. This application Apr. 10, 1985, Ser. No. 722,178

Int. Cl.[4] G01N *1/00, 33/53*

U.S. Cl. 422—57 **14 Claims**



1. A device for performing quantitative or qualitative chemical and immunochemical assays comprising:

a body having a planar front surface and a rear surface, the body defining therein a test sample tube, a plurality of reagent tubes, and an assay tube having an inner surface, each of said tubes having an opening communicating with the front surface of the body, each of the sample and reagent tubes also having an opening communicating with the rear surface of the body and the assay tube having a discharge opening, the front surface of the body having one or more grooves therein for connecting the openings of the sample and reagent tubes that communicate with the front surface of the body to the opening of the assay tube that communicates with the front surface of the body;

a thin sheet of resiliently flexible material being affixed to the front surface of the body coacting with the one or more grooves therein to provide a conduit system through which fluid contents of the sample and reagent tubes may flow;

valve means coacting with the opening of the sample tube that communicates with the front surface of the body and at least some of the openings of the reagent tubes that communicate with the front surface of the body for directing flow of fluids from said tubes therebetween and through the assay tube in a manner and sequence required to perform an assay; and

pistons slidably disposed in the sample tube and reagent tubes for forcing fluid therefrom into the conduit system.

4,585,624

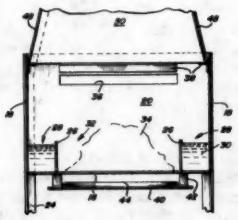
PARAFORMALDEHYDE GAS GENERATOR FOR FUMIGATING ANIMAL HOUSES

Galen F. Young, Box 353, R.D. #3, Manheim, Pa. 17545, and Bernell E. Swords, 2863 E-Town Rd., Elizabethtown, Pa. 17022

Filed Nov. 19, 1984, Ser. No. 673,240

Int. Cl.[4] B01J *7/00*

U.S. Cl. 422—305 **5 Claims**



1. A gas generator comprising a base and a hood positioned on top of the base with the hood including an opening at the upper end portion thereof for discharging gas therefrom, said base including an open topped container having a plurality of compartments, each of the compartments being open at the top with at least one of the compartments receiving a gas generating material when heated and at least one of the compartments receiving water for producing water vapor when heated for mixing with the gas, a heating unit positioned under the container for heating the contents thereof, an air vent means in the container above the compartments and below the upper end thereof for admitting air for circulation up through the hood and mixing with the gas and water vapor for discharge from the opening in the hood, said container being defined by a bottom wall oriented generally horizontally and generally vertically extending peripheral walls forming a generally parallelopiped container and supporting legs attached to the container and extending below the container for supporting the bottom wall above a supporting surface, said heating unit being attached to and supported from the underside of the bottom wall, said compartments being defined by transverse partition members extending between opposed peripheral walls with the partition members being spaced from each other and having a heighth substantially less than the heighth of the peripheral walls, said partition members dividing the lower portion of the interior of the container into three compartments with a large central compartment and two smaller end compartments with the end compartments receiving water and the central com-

partment receiving material for producing formaldehyde gas when heated, said air vent means including a horizontally elongated, vertically narrow slot in each of the peripheral walls of the container with the slot being located adjacent to but spaced below the upper end of the container.

4,585,625

CATALYTIC THERMAL OXIDATION OF METHYL ISOCYANATE IN WASTE GASES

George F. Chadwick, Williamsville, N.Y., and Lawrence A. Kennedy, Worthington, Ohio, assignors to FMC Corporation, Philadelphia, Pa.

Filed Sep. 4, 1985, Ser. No. 772,290
Int. Cl.[4] B01D *53/36*
U.S. Cl. 423—236 15 Claims

1. The method for reducing the content of methyl isocyanate in gaseous waste streams which comprises subjecting the gaseous waste stream containing methyl isocyanate to thermal oxidation at a temperature between 400° C. and 566° C. in the presence of an effective amount of at least one transition metal oxide catalyst for a period sufficient to oxidize methyl isocyanate.

4,585,626

PROCESS FOR MAKING INTO USEFUL PRODUCTS THE URANIUM AND RARE EARTHS CONTAINED IN IMPURE UF_4 RESULTING FROM THE EXTRACTION OF URANIUM FROM PHOSPHORIC ACID

Antoine Floreancig, St. Genis Laval, France, assignor to Uranium Pechiney Ugine Kuhlmann, Paris, France

Filed Jul. 25, 1983, Ser. No. 516,965
Claims priority, application France, Aug. 12, 1982, 82 14353
Int. Cl.[4] C01F *13/00*
U.S. Cl. 423—2 22 Claims

1. A process for making into useful products the uranium and rare earths contained in impure uranium tetrafluoride resulting from the recovery of uranium from phosphoric acid, comprising dissolving said uranium tetrafluoride in a hot condition in a nitric solution with a phosphoric ester-containing solvent for extracting uranyl nitrate, and separating from the aqueous phase from which the uranium is removed, the solvent which is charged with uranyl nitrate to be made into a useful product, characterised by, in order to achieve easy separation of the aqueous phase from which the uranium has been removed, from the uranyl nitrate extraction solvent:

(a) dissolving UF_4 in two steps at a suitable temperature, the first step comprising introducing insufficient amounts of nitric acid and the aluminum compound for complete dissolution of the impure uranium tetrafluoride and keeping the resulting suspension in an agitated condition for a period of time of at least 0.5 hour, and the second step comprising introducing amounts of nitric acide and the aluminum compound, which are at least sufficient to put into solution the uranium which was not dissolved in the first step, and while maintaining the suspension in an agitated condition; and

(b) extracting the uranyl nitrate by bringing into contact the aqueous medium resulting from the dissolution of UF_4 and the uranyl nitrate extraction solvent containing the phosphoric ester.

4,585,627

PROCESS FOR THE CONCENTRATION OF URANIUM FROM SEA WATER

Dieter Heitkamp, Jülich, and Peter Inden, Düsseldorf, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich GmbH, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,654
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1980, 3047220
Int. Cl.[4] C02F *1/28*
U.S. Cl. 423—6 2 Claims

1. In a process for the selective concentration of uranium from sea water through chemical accumulation on a solid adsorption medium of titanium oxide, which does not require H^+ ions for regeneration and subsequent elution with a carbonate-containing eluent; the improvement comprising the utilization of sea water as the eluent which is supplied with sufficient carbonate ions and thereby freed of precipitates.

4,585,628

STRIPPING METALS FROM SPENT CATALYSTS

Robert G. Fischer, Jr., Fairfield, and Cynthia A. Van Savage, Ridgefield, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 481,136, Apr. 1, 1983, abandoned. This application Dec. 10, 1984, Ser. No. 679,964
Int. Cl.[4] C01G *55/00, 39/00, 51/00, 53/00*
U.S. Cl. 423—22 11 Claims

1. A method of extracting subvalent catalyst metal from spent catalyst which comprises subvalent catalyst metal on inert catalyst support material, by means of a ligand selected from salts of 1,1-dithiolate dianions, dithiocarbimate dianions, dithiocarbamate dianions and dithiocarbamate monoions, said method comprising oxidating the subvalent catalyst metal to a higher valence state by contacting the catalyst with either:

a. a solution of the selected ligand and an oxidized species of the same ligand in proportions in the range from 1:5 to 5:1 of the ligand to its oxidized species, in a solvent for the ligand and its oxidized species and for the metal complex that is formed by reaction of the ligand with the oxidated catalyst metal; or

b. a solution of the selected ligand in a solvent for the ligand and for the metal complex that is formed by reaction of the ligand with the oxidated catalyst metal, and simultaneously also contacting the catalyst and ligand with oxygen in amount sufficient for oxidating the catalyst metal to a higher valence state;

whereby the catalyst metal is oxidated to a higher valence state which is complexed by the ligand and the resulting complex is dissolved by the solvent.

2. A method defined by claim 1, wherein the solvent is water and the selected salt is a dipotassium or disodium salt of a 1,1-dithiolate dianion.

3. A method defined by claim 1 wherein the solvent is water and the selected salt is a disodium or dipotassium salt of a dithiocarbimate dianion or a dithiocarbamate dianion.

4,585,629

TREATMENT OF WATER USED IN PREPARING PHOSPHATE MATRIX SLURRIES

Ross A. Kremer, Ringoes, and Stephen W. Saunders, Plainsboro, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 545,553, Oct. 26, 1983. This application Sep. 10, 1984, Ser. No. 649,235
Int. Cl.[4] C01F *11/00*
U.S. Cl. 423—167 19 Claims

1. A method of producing a water-based phosphate matrix slurry, comprising:

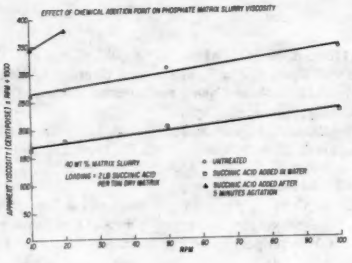
dissolving an additive in the water utilized to form the slurry prior to the formation of the slurry, wherein said additive is a water-soluble compound selected from the group consisting of organic acids, monovalent non-metallic inorganic salts, polyvalent non-metallic inorganic salts and stannic chloride, said additive having a water solubility of at least 0.02% by weight; and

combining the additive-containing water with a phosphate matrix to obtain a slurry of the phosphate matrix in the additive-containing water.

9. A method of reducing the viscosity of water-based phosphate matrix slurries, consisting essentially of:

dissolving a viscosity-reduction effective amount of an additive in the water utilized to form the slurry, prior to the formation of the slurry, wherein said additive is a water-

soluble compound selected from the group consisting of organic acids, mineral acids, monovalent metallic or non-metallic inorganic salts, polyvalent metallic or non-metallic inorganic salts and mixtures thereof, said additive having a water solubility of at least 0.02 weight %; and


EFFECT OF CHEMICAL ADDITION POINT ON PHOSPHATE MATRIX SLURRY VISCOSITY
APPARENT VISCOSITY (CENTIPOISES) = RPM × 100
40 WT % MATRIX SLURRY
LOADING = 2 LB SUCCINIC ACID PER TON DRY MATRIX
UNTREATED
SUCCINIC ACID ADDED IN WATER
SUCCINIC ACID ADDED AFTER 5 MINUTES AGITATION
RPM

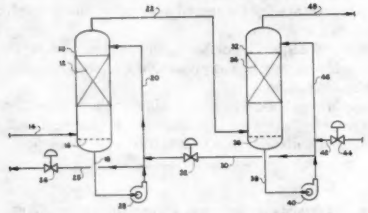
combining the additive-containing water with the as-mined phosphate matrix to obtain a slurry of the phosphate matrix in the additive-containing water.

4,585,630

PROCESS FOR SELECTIVELY REMOVING HYDROGEN SULFIDE

Van A. Kent, Lake Jackson; Roberto A. Abib, Clute, and Larry H. Kirby, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 11, 1985, Ser. No. 710,722
Int. Cl.[4] C01B *17/05*
U.S. Cl. 423—234 **8 Claims**



1. A process for selectively removing H_2S from a sour gas feed stream containing H_2S with or without CO_2 which comprises the steps of

(A) contacting said sour gas stream with a first aqueous solution of a mixture of sulfides and bisulfides having a cation selected from the group consisting of alkali metal ions, alkaline earth ions, ammonium ions, and mixtures thereof and having a pH in the range from about 9 to about 12 whereby a minor amount of said H_2S is removed, a gas stream of lowered H_2S content is generated, and a solution having an excess of bisulfide ions is generated,

(B) removing a portion of said generated solution as needed,

(C) separating said generated gas stream,

(D) contacting said generated gas stream with a second aqueous solution of a mixture an alkali metal sulfide and an alkali metal bisulfide having a pH maintained in the range from about 11.0 to about 13.5 and is at least one unit higher than said first pH range

whereby a substantially purified gas stream is generated, and said first solution is generated,

(E) separating said purified gas stream from said first solution, and

(F) continuously recycling said first solution to said first contacting step.

4,585,631

METHOD FOR THE CONVERSION OF NITROGEN OXIDES CONTAINED IN GASEOUS PRODUCTS OF COMBUSTION

Roland Pfeiffer, Essen, Fed. Rep. of Germany, assignor to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jan. 25, 1985, Ser. No. 694,993
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402771
Int. Cl.[4] C01B *21/00*
U.S. Cl. 423—235 **10 Claims**

1. A method for the treatment of combustion products containing at least one nitrogen oxide comprising:

providing said flue gas combustion products;

providing a reducing agent selected from the group consisting of ammonia (NH_3), synthesis gas ($CO+H_2$), methane (CH_4), higher hydrocarbons and a mixture of said reducing agents;

irradiating said reducing agent with radiant energy emitted by at least one laser to increase the ractivity or the reducing agent; and thereafter

blending only said products of combustion and said irradiated reducing agent in a reaction chamber to convert said at least one nitrogen oxide into innoxious flue gas constituents.

4,585,632

PROCESS FOR THE REMOVAL OF NITROGEN OXIDES FROM EXHAUST GASES

Michael Schneider, Ottobrunn Riemerling, and Karel Kochloefl, Moosburg, both of Fed. Rep. of Germany, assignors to Süd-Chemie Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 14, 1984, Ser. No. 682,094
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345675; Jul. 31, 1984, 3428231
Int. Cl.[4] B01J *8/00;* **C01B** *21/00*
U.S. Cl. 423—239 **21 Claims**

1. Process for the removal of nitrogen oxides from exhaust gases, which comprises the steps of:

A. passing methanol over a methanol conversion catalyst selected from the group consisting of catalytic noble metals supported on carriers comprising titanium dioxide, zirconium dioxide or cerium dioxide and a catalytic metal comprising copper oxide and producing a hydrogen-rich gas substantially free of methanol;

B. passing said hydrogen-rich gas and exhaust gases containing nitrogen oxide over a supported noble metal nitrogen oxide reduction catalyst under conditions conductive to the reduction of nitrogen oxides to nitrogen and water vapor.

4,585,633

REACTOR FOR DRY FLUE GAS DESULFURIZATION

John Van Camp, Philadelphia, Pa., and Stanley J. Baran, Cherry Hill, N.J., assignors to Proctor & Schwartz, Inc., Horsham, Pa.

Filed Jun. 30, 1981, Ser. No. 279,089
Int. Cl.[4] C01B *17/00*
U.S. Cl. 423—242 **4 Claims**

1. A method for cleansing waste stack gases containing sulfur oxides from a generator of such gases, said generator being operable at a predetermined load and a turndown from such load; comprising the steps of

introducing said waste stack gases into a reaction zone;

introducing an aqueous slurry containing an alkaline reagent into said zone for reaction of said reagent with said sulfur oxides, to produce an effluent stream containing precipitated particulate;

passing said effluent stream from the reaction zone to a filter zone and filtering said precipitated particulate from the stream in said filter zone;

controlling the ratio of aqueous slurry flow to waste stack gases to maintain a relatively dry flow in said filter zone;

determining the level of waste stack gas flow velocity required for optimum mixing in said reaction zone of sulfur oxides and alkaline reagent; and

varying the area of flow of waste stack gases at the point of introduction of such gases into the reaction zone with turndown in generator load to maintain the gas flow velocity at or near said level.

4,585,634

PROCESS FOR THE PRODUCTION OF URANIUM TRIOXIDE HAVING A LARGE SPECIFIC SURFACE FROM HYDRATED URANYL NITRATE

Roland Bachelard, Lyons, and Pierre Lakodey, Saint Priest, both of France, assignors to Comurhex, Paris, France

PCT No. PCT/FR83/00083, § 371 Date Dec. 5, 1983, § 102(e) Date Dec. 5, 1983, PCT Pub. No. WO83/03820, PCT Pub. Date Nov. 10, 1983

PCT Filed Apr. 29, 1983, Ser. No. 563,382

Claims priority, application France, Apr. 29, 1982, 82 07923

Int. Cl.⁴ C01G *43/01*

U.S. Cl. 423—260 **5 Claims**

1. A process for the production of uranium trioxide having a large specific surface by the thermal denitration of uranyl nitrate hexahydrate corresponding to the formula $UO_2(NO_3)_2 \cdot xH_2O$, in which $2 \leqq x \leqq 6$, the improvement comprising carrying out the denitration process in two stages, said first stage comprising heating liquid uranyl nitrate hexahydrate to a temperature in the range of from 160° C. to 260° C. to obtain a solid phase containing at least 55% by weight of uranium, and said second stage comprising progressively heating said solid phase at a heating rate of not more than 1000° C. per hour to a temperature of not more than 600° C. and holding said solid phase at the said temperature for a period of at most six hours to obtain a second solid phase of UO_3 having a specific surface larger than 10 m^2/g.

4,585,635

METHOD FOR PREPARING PB-β″-ALUMINA CERAMIC

Eric E. Hellstrom, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1984, Ser. No. 645,651

Int. Cl.⁴ C01F *17/00, 7/02;* C01G *15/00*

U.S. Cl. 423—263 **10 Claims**

6. A method for substituting cations for Na ions in a formed polycrystalline structure body of Na-β″-alumina, Na-β″-ferrite, or Na-β″-gallate consisting essentially of trivalent cation and O lattice and of Na ions which migrate in relation to the trivalent cation and O lattice of said structure under the influence of an electric field, said method comprising heating said body, contacting said body with a vapor source of K, Rb, or Cs ions heated to a temperature essentially equal to the temperature of said body, maintaining said body and said source of ions at said temperature, said temperature being sufficient to cause at least about 90% of the Na ions in said body to be replaced by said vapor source ions, immersing the resultant body in a molten salt having divalent and trivalent cations larger than Na ions and no greater than said vapor source ions, and maintaining said body immersed in said molten salt until about 90% of said vapor source ions are replaced by said divalent or trivalent cations, whereby a substituted formed polycrystalline body substantially free of cracks is obtained.

4,585,636

PROCESS FOR THE MANUFACTURE OF PURIFIED PHOSPHORIC ACID

Alexander Iosef; Menachem Bar-on, both of Arad; Jacob Oren, Beer-Sheva, and Dagobert Kellerman, Haifa, all of Israel, assignors to Negev Phosphates Ltd., Dimona, Israel

Filed Oct. 17, 1984, Ser. No. 661,710

Int. Cl.⁴ C01B *25/16*

U.S. Cl. 423—321 S **10 Claims**

1. A process for the recovery of purified phosphoric acid from an aqueous reaction mixture obtained by the decomposition of phosphate rock with a mineral acid selected from sulfuric acid, hydrochloric acid or mixtures thereof, which consists of the steps:

(a) reacting the aqueous solution mixture with a Ca^{++}-containing compound in an amount sufficient to obtain a clarified solution which contains between 2% and 12% (expressed as P_2O_5) monocalcium phosphate dissolved therein after resulting precipitated solids are separated out;

(b) separating out the resulting precipitated solids;

(c) extracting phosphoric acid from the clarified solution obtained in step (b) with an organic solvent capable of extracting phosphoric acid from aqueous solutions said organic solvent being selected from the group consisting of lower aliphatic alcohols and ketones, trialkyl phosphates, organic amines, amides, or mixtures thereof and

(d) recovering the phosphoric acid from the solvent extract.

4,585,637

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-12

Mae K. Rubin, Bala Cynwyd, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 26, 1984, Ser. No. 624,561

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—328 **13 Claims**

1. A method for synthesizing a crystalline silicate ZSM-12 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises (i) preparing a mixture capable of forming said crystalline silicate, said mixture containing sources of alkali metal cations, benzyltrimethylammonium cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	50–∞
H_2O/OH^-	100–500
OH^-/SiO_2	0.03–0.20
$R/(R + M)$	0.3–0.9

wherein M is said alkali metal cation and R is said benzyltrimethylammonium cation, (ii) maintaining the mixture at a temperature of from about 80° C. until crystals of the crystalline silicate are formed and (iii) recovering the crystalline silicate ZSM-12 from step (ii), said recovered crystalline silicate containing alkali metal and benzyltrimethylammonium cations.

13. Benzyltrimethylammonium-containing silicate ZSM-12.

4,585,638

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-5

Günter H. Kühl, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 16, 1984, Ser. No. 631,683

Int. Cl.⁴ C01B *33/28*

U.S. Cl. 423—328 **13 Claims**

1. A method for synthesizing a crystalline silicate ZSM-5 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises (i) preparing a mixture capable of forming said crystalline silicate, said mixture comprising sources of alkali metal cations, hexaalkylhexamethylenediammonium cations, an oxide of silicon, and water

and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3: 25 to ∞
H_2O/SiO_2: 0.2 to 120
OH^-/SiO_2: 0.02 to 0.50
$(M_2O+RO)/SiO_2$: 0.02 to 2.0
$RO/(RO+M_2O)$: 0.2 to 0.95

wherein M is said alkali metal cation and R is said hexaalkylhexamethylenediammonium cation, alkyl being propyl, butyl or a mixture thereof, (ii) maintaining the mixture at a temperature of from about 90° C. to about 225° C. until crystals of the crystalline silicate are formed and (iii) recovering the crystalline silicate ZSM-5 from step (ii), said recovered crystalline silicate containing alkali metal and hexaalkylhexamethylenediammonium cations, alkyl being propyl, butyl or a mixture thereof.

13. Hexaalkylhexamethylenediammonium-containing ZSM-5 silicate, alkyl being propyl, butyl or a mixture thereof.

4,585,639

PREPARATION OF CRYSTALLINE SILICATE ZSM-12

Rosemarie Szostak, Cumming, Ga., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 600,687, Apr. 16, 1984, abandoned. This application Dec. 20, 1984, Ser. No. 684,181
Int. Cl.[4] C01B *33/28;* B01J *29/06*
U.S. Cl. 423—328 **13 Claims**

1. A method for synthesizing a crystalline silicate ZSM-12 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises (i) preparing a mixture capable of forming said crystalline silicate, said mixture comprising sources of alkali metal cations, an oxide of aluminum, an oxide of silicon, water and diquaternary cations of the formula

$$(C_2H_5)(CH_3)_2N^+(CH_2)_mN^+(CH_3)_2(C_2H_5),$$

wherein m is 4 or 6, and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3 40 to 200
H_2O/SiO_2 5 to 200
OH^-/SiO_2 0.01 to 1.0
M/SiO_2 0.01 to 2.0
R/SiO_2 0.05 to 1.0

wherein M is said alkali metal cation and R is said diquaternary cation, (ii) maintaining the mixture at a temperature of from about 80° C. to about 200° C. until crystals of the crystalline silicate are formed and (iii) recovering the crystalline silicate ZSM-12 from step (ii), said recovered crystalline silicate containing alkali metal and said diquaternary cations.

13. Diquaternary cation-containing silicate ZSM-12, said diquaternary cation having the formula

$$(C_2H_5)(CH_3)_2N^+(CH_2)_mN^+(CH_3)_2(C_2H_5),$$

m being 4 or 6.

4,585,640

SYNTHESIS OF MOLECULAR SIEVING HIGH SILICA MORDENITE USING SYNTHESIS DIRECTING ORGANIC DYES

Michael J. Desmond, Cleveland Hts.; Frederick A. Pesa, Aurora, and Janie K. Currie, Novelty, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 16, 1984, Ser. No. 672,403
Int. Cl.[4] C01B *33/28;* B01J *29/18*
U.S. Cl. 423—329 **33 Claims**

1. A method for making molecular sieving high silica mordenite using a nitrogen-containing organic dye, said mordenite being represented in terms of mole ratios of oxides by the formula

$$aAO_{n/2}:dMO_{m/2}:xNa_2O:Al_2O_3:ySiO_2:zH_2O$$

wherein

A is the cation of said organic dye;
M is selected from the group consisting of Zn, Cd, Hg, Ga, Pd, Pt, Fe, Cr, Mn, Co, Ni or a mixture of two or more thereof;
n is the ionic charge of A and m is the ionic charge of M;
a is from zero to about 1;
d is from zero to about 1;
x is from about 0.5 to about 2;
y is from about 10 to about 100; and
z is from zero to about 20;

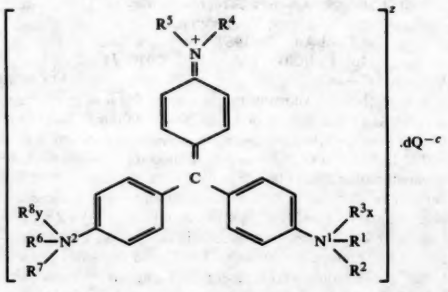
the X-ray diffraction pattern for said high silica mordenite showing the following significant lines:

Interplanar Spacing d(A)	Relative Intensity
13.6 + 0.2	m.
10.2 + 0.15	w.–m.
9.10 + 0.10	s.
6.60 + 0.10	s.
6.35 + 0.08	w.–m.
6.04 + 0.08	w.
5.80 + 0.06	w.–m.
5.02 + 0.05	w.
4.52 + 0.05	m.–s.
3.99 + 0.05	m.–s.
3.85 + 0.05	w.–m.
3.75 + 0.05	w.–m.
3.47 + 0.04	v.s.
3.39 + 0.04	s.
3.21 + 0.04	m.–s.
2.88 + 0.03	m.
2.51 + 0.02	w.

said process comprising the following steps:

(A) providing a mixture comprising: water; an oxide of silicon source; an oxide of aluminum source; a mineralizing agent selected from the group consisting of alkali and alkaline earth metal compounds of oxides, hydroxides, organic salts, nitrates, phosphates, halides or carbonates; and said nitrogen containing organic dye; the mole ratio of OH^- to Si being in the range of about 0.1 to about 10, the mole ratio of Si to Al being in the range of about 5 to about 50, the mole ratio of Si to mineralizing agent being in the range of about 0.1 to about 50, and the mole ratio of Si to organic dye being in the range of about 5 to about 100;

said organic dye being represented by the formula



wherein

N^1 has a charge of +1 or a neutral charge;
N^2 has a charge of +1 or a neutral charge;
x is zero when N^1 has a neutral charge, and is 1 when N^1 has a +1 charge;
y is zero when N^2 has a neutral charge, and is 1 when N^2 has a +1 charge;

R^1, R^2, R^3, R^4, R^5, R^6 and R^7 are independently hydrogen or alkyl groups of 1 to about 10 carbon atoms;
z is 1+x+y;
Q is an anion of charge c; and
d is z/c;
or said organic dye being the salt of a cation of the formula

wherein
R^9 and R^{10} are independently hydrocarbon groups of from 1 to about 10 carbon atoms; and
(B) maintaining said mixture at a temperature of about 80° C. to about 300° C. for an effective period of time to provide said mordenite.

4,585,641

PROCESS FOR PRODUCING CRYSTALLINE GALLOSILICATES

Sami A. I. Barri, London, and Dennis Young, Staines, both of England, assignors to The British Petroleum Company P.L.C., London, England

Continuation of Ser. No. 527,789, Aug. 30, 1983, abandoned. This application May 15, 1985, Ser. No. 734,754
Claims priority, application United Kingdom, Sep. 4, 1982, 8225278
Int. Cl.⁴ C01B *33/20*
U.S. Cl. 423—331 **11 Claims**

1. A process for producing crystalline gallosilicates having the following composition in terms of the mole ratios of the oxides:

$$0.9\pm0.25M_{2/n}O:Ga_2O_3:xSiO_2:yH_2O.zQ$$

wherein M is at least one cation having a valence n, x is at least 10, y/x is from 0 to 30, Q is a template used in the synthesis of the gallosilicate and z/x is 0–20, wherein the gallosilicate in the organic free hydrogen-form has an X-ray diffraction pattern substantially as set forth in Table A of this specification,
comprising freshly precipitating gallium hydroxide from a solution,
dissolving the freshly precipitated gallium hydroxide in an aqueous alkali metal hydroxide solution,
adding an organic or inorganic nitrogen base to the solution to form a mixture thereof,
slowly adding a source of silica to the mixture of said freshly precipitated gallium hydroxide solution and the nitrogen base,
mixing the solution until a homogeneous gel is formed, and
crystallising the gel at a temperature above 70° C. to obtain said crystalline gallosilicate.

4,585,642

PROCESS FOR THE PREPARATION OF CRYSTALLINE SODIUM SILICATES

Hans-Peter Rieck, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 9, 1985, Ser. No. 732,418
Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417649
Int. Cl.⁴ C01B *33/32*
U.S. Cl. 423—333 **11 Claims**

1. A process for the preparation of crystalline sodium silicates with a molar ratio SiO_2/Na_2O of 1.9:1 to 3.5:1 from amorphous sodium silicate at elevated temperature, which comprises adding to water-containing amorphous sodium silicate with a molar ratio SiO_2/Na_2O of 1.7:1 to 3.75:1, and a water content of 5 to 95% by weight, 0.01 to 30 parts by weight of the crystalline sodium silicate to be prepared (per 100 parts by weight of Na_2O+SiO_2 in the water-containing amorphous silicate), dehydrating the reaction mixture by heating, and keeping the dehydrated reaction mixture at a temperature of at least 450° C., but below the melting point, until the sodium silicate has crystallized.

4,585,643

PROCESS FOR PREPARING CHLOROSILANES FROM SILICON AND HYDROGEN CHLORIDE USING AN OXYGEN PROMOTER

Thomas H. Barker, Jr., Vancouver, Wash., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 31, 1985, Ser. No. 739,681
Int. Cl.⁴ C01B *33/08*
U.S. Cl. 423—342 **13 Claims**

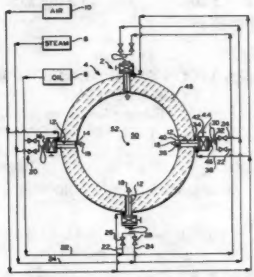
1. In the process for producing chlorosilanes of the formula H_xSiCl_{4-x}, wherein x is an integer from 0 to 3, by reacting silicon with hydrogen cholride at elevated temperatures, the improvement which comprises (a) treating the silicon with a source of oxygen to initially fluidize the silicon, (b) reacting the fluidized silicon with hydrogen chloride until selectivity decreases, and (c) thereafter intermittently fluidize the silicon with a source of oxygen to selectively form chlorosilanes which contain hydrogen.

4,585,644

CHANGING OIL TUBES IN A CARBON BLACK REACTOR

Richard T. Divis, Ochelata, and William R. Jones, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 4, 1984, Ser. No. 616,868
Int. Cl.⁴ C01B *31/02*
U.S. Cl. 423—450 **7 Claims**

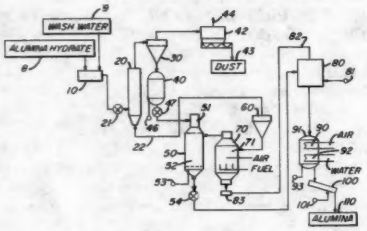


5. A process for removing a feed oil tube introducing an oil flow into a carbon black reactor without shutdown of the reactor comprising:
(a) initiating a steam flow into a feed oil tube connected by a flexible hose to a tee fitting which is connected to both a steam source and an oil feed source;
(b) terminating the oil flow through said feed oil tube;
(c) loosening a packing means around said feed oil tube sufficiently to allow withdrawal of said feed oil tube;
(d) withdrawing said feed oil tube to clear the closing means of a valve on a tubular member providing access to said reactor;
(e) closing said valve means on said tubular member; and
(f) withdrawing said feed oil tube from said packing means of the carbon black reactor.

4,585,645
ALPHA ALUMINA PRODUCTION IN A STEAM-FLUIDIZED REACTOR

Steven W. Sucech, Murrysville, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 3, 1985, Ser. No. 719,559
Int. Cl.[4] C01F 7/02
U.S. Cl. 423—625 **20 Claims**



1. A process for transforming alumina hydrate into an anhydrous alumina product containing alpha alumina, said process comprising

(a) heating alumina hydrate in a dehydrating zone to a sufficiently high temperature and for a sufficient time to obtain an alumina having a residual water content below about 15 wt%,

(b) transferring the alumina from said dehydrating zone into a heating zone and there heating the alumina to an elevated temperature greater than the temperature in said dehydrating zone,

(c) transferring the alumina from said heating zone into a reactor separate from said heating zone and there maintaining the alumina in a fluidized bed at a temperature of about 900°–1350° C. for a sufficient time to transform the alumina into an anhydrous alumina product comprising at least about 10 wt% alpha alumina, and

(d) fluidizing the alumina in the reactor at a pressure of less than about 1.5 atmospheres with a fluidizing gas comprising principally steam.

4,585,646
OBTAINING SILICON COMPOUNDS BY RADIATION CHEMISTRY

Henry J. Gomberg, 430 Hillspur Rd., Ann Arbor, Mich. 48105

Filed Jun. 5, 1984, Ser. No. 617,594
Int. Cl.[4] C01B 1/02
U.S. Cl. 423—648 R **8 Claims**

1. The irradiation process following the reaction

$$Si_2OCl_6 \rightsquigarrow SiO + SiCl_4 + Cl_2$$

with radiation from a source taken from the group of cobalt, fission reactor and fusion reactor.

4,585,647
METHODS AND COMPOSITIONS FOR INTRAVAGINAL CONTRACEPTION

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Nov. 19, 1984, Ser. No. 672,619
The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.
Int. Cl.[4] A61K 31/74
U.S. Cl. 424—45 **16 Claims**

1. A pressurized contraceptive composition in an aerosol container capable of forming a spray upon release of pressure therefrom which composition is a liquid inside the container and forms a gel on contact with living tissue and which comprises by weight about 20 to 60 percent water, about 20 to 80 percent propellant, 0 to about 40 percent of a non-propellant volatile solvent, about 0.02 to about 1.5 percent of a sperm function inhibitor, and 7.5 to 30 percent polyoxyethylene-polyoxypropylene copolymer of the formula:

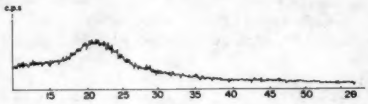
$$Y[(H_3H_6O)_n(C_2H_4O)_m H]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the molecular weight of the oxypropylene groups is from about 3000 to 4500 and the value of m is such that the oxyethylene groups constitute about 50 to 90 percent of the total weight of the compound.

4,585,648
DENTIFRICE COMPOSITION COMPRISING ZIRCONIUM-BONDED SYNTHETIC AMORPHOUS SILICATE

Tsutomu Maeyama, Chiba; Kenji Kaneko, and Shigeru Ishii, both of Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Aug. 8, 1984, Ser. No. 638,679
Claims priority, application Japan, Aug. 24, 1983, 58-153156
Int. Cl.[4] A61K 7/16; A61J 3/02
U.S. Cl. 424—49 **23 Claims**



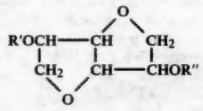
1. A dentifrice composition comprising: 1 to 50% by weight of a zirconium-bonded synthetic amorphous silicate (zirconosilicate) with a zirconium content of 0.1 to 10% by weight as ZrO_2 based on SiO_2 as an abrasive, and a dentifrice vehicle containing an effective stabilizing amount of water and a humectant and an effective flavoring amount of a flavoring material.

4,585,649
DENTIFRICE FORMULATION AND METHOD OF TREATING TEETH, MOUTH AND THROAT THEREWITH TO REDUCE PLAQUE ACCUMULATION AND IRRITATION

Matthew J. Lynch, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Dec. 21, 1984, Ser. No. 685,167
Int. Cl.[4] A61K 7/16, 9/68
U.S. Cl. 424—49 **5 Claims**

1. A method for inhibiting the formation of plaque and calculus and relieving throat irritations in the oral cavity of mammals which comprises periodically treating the surfaces of the throat, mouth, teeth and gums with a mouthwash or gargle composition containing an effective *S. mutans* inhibiting amount of a dianhydrohexitol compound having the general formula:



wherein R' and R" are individually selected from alkyl radicals selected from the group consisting of $—CH_3$, $—C_2H_5$, $—C_3H_7$, $—C_4H_9$ or —H when the other R' or R" is an alkyl radical of 1–4 carbon atoms whereby at least a portion of the bacteria on said surfaces is essentially inhibited from further growth or removed by dissolution.

4,585,650

SKIN LUBRICATING COSMETIC COMPOSITION

Thomas E. Newberry, Jr., Longwood; Ralph R. Uhrmacher, Satellite Beach, and Robert K. Arblaster, Altamonte Springs, all of Fla., assignors to White Laboratories, Inc., Orlando, Fla.

Filed Oct. 4, 1982, Ser. No. 432,551
Int. Cl.[4] A61K 7/15, 31/14
U.S. Cl. 424—73 22 Claims

1. A water-based cosmetic composition for lubricating the skin for shaving consisting essentially of a mixture of effective amounts of water, from about 0.1 to about 4.0 percent by weight of a gel former and binding agent selected from the group consisting of cellulose gums and magnesium aluminum silicate, from about 0.01 to about 1.0 percent by weight of a quaternary ammonium gelling agent with skin conditioning properties, and from about 0.05 to about 15 percent by weight of an emollient.

4,585,651

ACTIVE/PASSIVE IMMUNIZATION OF THE INTERNAL FEMALE REPRODUCTIVE ORGANS

Lee R. Beck; Charles F. Flowers, Jr.; Donald R. Cowsar, and Albert C. Tanquary, all of Birmingham, Ala., assignors to Stolle Research & Development Corporation, Lebanon, Ohio

Continuation of Ser. No. 952,109, Oct. 17, 1978, abandoned. This application Dec. 18, 1980, Ser. No. 217,746
Int. Cl.[4] A61K 39/02, 39/12, 9/50
U.S. Cl. 424—88 4 Claims

1. A method of actively eliciting an immunization response of the internal female reproductive organs, comprising:

depositing microparticles containing an antigen in the vagina; and

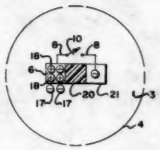
allowing the natural transport mechanism of said organs to convey said microparticles across the cervix into the uterus and fallopian tubes, whereby said antigen is released by said microparticles so as to elicit an antibody response within the uterus.

4,585,652

ELECTROCHEMICAL CONTROLLED RELEASE DRUG DELIVERY SYSTEM

Larry L. Miller, Minneapolis, Minn.; Ronald L. Blankespoor, Grand Rapids, Mich., and Baruch Zinger, Rehovot, Israel, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Nov. 19, 1984, Ser. No. 673,522
Int. Cl.[4] A61K 31/745
U.S. Cl. 424—83 19 Claims



1. A method for the controlled delivery of an ionic bioactive chemical into a physiological medium comprising:

(a) ionically binding said chemical to a polymeric body comprising oppositely-charged redox sites;

(b) contacting said polymeric body with said physiological medium; and

(c) releasing said bound chemical into said medium as an ionic species by neutralizing the charge on the polymeric body.

4,585,653

NEURAMINIDASE TREATED ANCROD

Jeffrey W. Williams, Columbus, Ohio, assignor to Robert L. Letcher, New York, N.Y.

Continuation of Ser. No. 584,102, Feb. 27, 1984, abandoned. This application Dec. 26, 1984, Ser. No. 686,232
Int. Cl.[4] A61K 35/58
U.S. Cl. 424—98 17 Claims

1. A biologically effective agent comprising:

ancrod which has been subjected to the enzymatic action of neuraminidase and is essentially free of neuraminic acid residues.

13. A method of lysing fibrinogen comprising:

lysing said fibrinogen with a biologically effective amount of ancrod having been treated with neuraminidase.

4,585,654

PROCESS FOR PASTEURIZING FIBRONECTIN

Ricardo H. Landaburu, Rye Town, N.Y.; Godfrey W. Amphlett, Boston, Mass.; Roy E. Branson, San Ramon, Calif., and Arthur B. Shaw, Harrison, N.Y., assignors to Armour Pharmaceutical Co., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 489,886, Apr. 29, 1983, abandoned. This application Dec. 21, 1984, Ser. No. 684,440
Int. Cl.[4] A61K 37/02, 35/14
U.S. Cl. 424—101 2 Claims

1. A process for pasteurizing an aqueous solution consisting essentially of fibronectin to inactivate hepatitis viruses therein while preserving its native character consisting essentially of:

heating and simultaneously mechanically agitating said aqueous solution containing fibronectin at 60° to 70° C. for 10 to 20 hours to effect pasteurization thereof in the presence of: 25% to 50% w/v of a polyol selected from the group consisting of sucrose, maltose, lactose, glucose, mannose, and galactose; 0.01% to 0.5% w/v of a surface active agent selected from the group consisting of sodium cholate, sodium taurocholate, sodium deoxycholate, and sodium glycocholate; and 0.0005 to 0.2M of a chelating agent selected from the group consisting of ethylenediaminetetraacetic acid, ethylene-bis-(oxyethylene nitrile)-tetraacetic acid and orthophenanthrolene.

4,585,655

METHOD FOR COLORING NATURAL CASINGS AND PRODUCT THEREOF

Mykola Sherbanenko, 3610 Evergreen La., Plymouth, Minn. 55441

Continuation of Ser. No. 556,108, Nov. 29, 1983, abandoned. This application Jul. 26, 1985, Ser. No. 759,502
Int. Cl.[4] A23L 1/275; A22C 13/00
U.S. Cl. 426—106 18 Claims

1. A package comprising a sealed, vacuum packed receptacle having the air removed therefrom and containing at least one colored natural casing wherein said at least one casing prior to vacuum packaging having been previously colored by being flushed from the inside with an aqueous solution such that the interior walls of the casing absorb the color; said aqueous solution comprising an effective amount of at least one antioxidant, an effective amount of a preservative capable of minimizing the deterioration of said at least one packaged casing, and an effective amount of an edible dye system for coloring the casing; said sealed vacuum packed receptacle containing said at least one colored natural casing in said aqueous solution sufficient to maximize the ability of said at least one casing to remain soft and to allow permeation of said aqueous solution through to the outside casing surface to optimize the color thereof.

4,585,656

TREATMENT OF HERPES

Harold R. Rosenthal, and Laura Bert, both of 4 Laurel Pl., Eastchester, N.Y. 10709

Filed Aug. 20, 1984, Ser. No. 642,149
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 8 Claims

1. A method of treating herpes simplex, herpes varicella, and herpes zoster by topically applying to the affected area on the human body an effective amount of a composition comprising an effective amount of at least 20% aloe vera by weight and an effective amount of 10% dried, powdered kelp by weight.

4,585,657

AGGLOMERATED FLAVOR BITS

Jan Karwowski, Franklin Lakes, N.J.; James G. Bangert, Manuet, N.Y.; Robert F. Ferraro, Little Falls, and Patricia M. Brede, Mendham, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Dec. 14, 1984, Ser. No. 681,959
Int. Cl.[4] A23L *1/22*
U.S. Cl. 426—285 4 Claims

1. A process to make agglomerated bits, comprising:
(a) mixing a granulated sugar with a vegetable oil to form an oleaginous sugar mixture;
(b) blending into said oleaginous sugar mixture with starch from a starch containing ingredient and a gum, a 1 percent solution of said gum having a viscosity above 3200 centipoises;
(c) agglomerating said blended oleaginous sugar mixture with an aqueous solution to form agglomerated bits, said blended oleaginous sugar mixture, said starch containing ingredient, and said aqueous solution being in a proportion sufficient to become cemented together; and
(d) drying said agglomerated bits to the desired moisture content whereby said agglomerated bits dissolve within 1 minute on contact with hot water at a temperature between about 150° F. and 212° F.

4,585,658

PROCESS FOR THE COATING OF CHEESE

Wilfried Poppe, Bleckede, and Manfred Dorscheimer, Lüneburg, both of Fed. Rep. of Germany, assignors to H. B. Fuller GmbH, Lüneburg, Fed. Rep. of Germany

Filed Oct. 16, 1984, Ser. No. 661,371
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1983, 3338492
Int. Cl.[4] A23C *19/16*
U.S. Cl. 426—303 5 Claims

1. A process for the coating of a cheese having either a highly fatty surface or having sharp edges or both, which comprises:
(a) coating the cheese with a first coat of an acetic acid ester of a monoglyceride of a hydrogenated fatty acid or mixtures thereof, said monoglyceride having a degree of acetylation ranging from 0.5 to 0.7 and having about 5 to 10% of monoglyceride, at about 45° to 90° C. to form a first coat;
(b) cooling the first coat to a temperature to solidify said first coat; and
(c) coating the first coat with a second coat at about 55° C., to 85° C., wherein the second coat consists essentially of a mixture of:
(i) 95 to 5%, by weight of a low melting microcrystalline wax having a solidification point of about 40° to about 60° C.; and
(ii) 5 to 95% by weight of a plastic paraffin having a solidification point of about 45° to about 60° C.

4,585,659

PROCESS FOR PRESERVING SEAFOOD

Edwin S. Hussey, 43 Newman St., St. John's, Newfoundland, Canada (A1E 4W2)

Filed Aug. 22, 1984, Ser. No. 643,009
Claims priority, application Canada, Oct. 13, 1983, 438925
Int. Cl.[4] A22C *25/00*; A23B *4/14*
U.S. Cl. 426—332 16 Claims

1. A process for preparing a preserved frozen seafood having reduced cold storage deterioration and improved retention of natural moisture consisting essentially of:
admixing with seafood a Xanthomonas hydrophilic colloid as the sole preservative agent in an amount ranging from about 0.001% to about 1.0% by weight of said seafood and freezing said seafood.

4,585,660

DECOMPRESSION OIL-FRYING METHOD FOR FOOD PRODUCTS

Ko Sugisawa; Yasushi Matsumura, both of Nara, and Kazumitsu Taga, Neyagawa, all of Japan, assignors to House Food Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 531,279, Sep. 12, 1983, abandoned. This application Sep. 6, 1985, Ser. No. 773,841
Claims priority, application Japan, Feb. 25, 1983, 58-31692
Int. Cl.[4] A23L *1/212*
U.S. Cl. 426—438 16 Claims

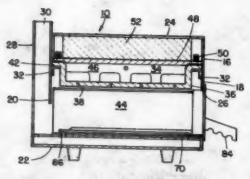
1. A decompression oil-frying method for producing a food product comprising:
(a) uniformly heating a food material under a first pressure P_1 between atmospheric pressure and a pressure higher than atmospheric pressure, up to a temperature T_1 which is lower than the boiling point of water in the food material under said first pressure P_1, said temperature T_1 not causing the evaporation of the water in the food material;
(b) rapidly decompressing said first pressure P_1 down to a second pressure P_2 under which the boiling point of the water is below said temperature T_1 and then immediately frying said food material in an oil held at a temperature T_2 substantially equal to said temperature T_1 and under said pressure P_2, whereby the water contained in said food material is rapidly evaporated to substantially uniformly dry said food material; and
(c) restoring atmospheric pressure around said food material after the food material is removed from the oil.

4,585,661

HEATING APPARATUS AND METHOD OF HEATING A FOOD PRODUCT

Barry J. Brummett, Santa Ana, Calif., assignor to Taco Bell, Irvine, Calif.

Filed Feb. 14, 1985, Ser. No. 701,385
Int. Cl.[4] A23L *1/00*; F24D *1/00*
U.S. Cl. 426—520 18 Claims



1. An apparatus for the rapid and substantially uniform heating of a food product, especially surface regions thereof, comprising an enclosure, generally horizontal partition wall structure in said enclosure separating said enclosure into a lower chamber for receiving said food product and an upper chamber incorporating means for generating temperature-con-

trolled heated steam in said upper chamber; means for stationarily supporting said food product in the lower region of said lower chamber; a plurality of spaced orifices in said partition wall structure communicating said upper chamber with said lower chamber for directing discrete flows of said steam from said upper chamber into said lower chamber so as to diffuse and circulate said steam within said lower chamber and to impinge against the upper surface of the food product contained therein for rapidly heating the latter; said steam generating means including means for heating said partition wall structure to a predetermined temperature; means for injecting a liquid at generally ambient temperature into said upper chamber so as to contact the heated partition wall structure to volatilize said liquid and form said heated steam, said liquid injecting means including at least one perforated water tube extending into said upper chamber, said tube being connected a source for supplying water thereto, said water being volatilized into said steam upon contacting the heated partition wall structure, said means for heating said partition wall structure including heating coil means extending within the surface regions of said partition wall structure intermediate said spaced orifices; and chimney means communicating with the lower region of said lower chamber to assist in circulating said steam through said lower chamber and thereafter drawing said steam from said enclosure.

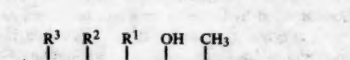
17. A method for the rapid and substantially uniform heating of a food product within an enclosure having a lower chamber for receiving said food product and an upper chamber; comprising generating heated temperature-controlled steam in said upper chamber; positioning said food product in the lower region of said lower chamber; conveying said steam through plurality of spaced orifices communicating said upper chamber with said lower chamber so as to direct discrete flows of said steam from said upper chamber into said lower chamber, said generating of said steam comprising heating a partition wall structure intermediate said upper and lower chambers to a predetermined temperature, and injecting a liquid at generally ambient temperature into said upper chamber to contact the heated partition wall structure and volatilize said liquid to form said steam, injecting said liquid comprising discharging said liquid from at least one perforated water tube extending into said upper chamber, said liquid being water volatilized into said steam upon contacting the heated partition wall structure; heating said partition wall structure through heating coils arranged within said partition wall structure intermediate said spaced orifices; and diffusing and circulating said steam within said lower chamber to impinge against and rapidly heat the upper surface of the food product contained therein; and discharging the steam from said enclosure through an outlet communicating with the lower region of said lower chamber.

4,585,662
ACYCLIC ALCOHOL ODORANT AND/OR FLAVORING SUBSTANCES

Roman Kaiser, Uster, and Dietmar Lamparsky, Wangen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 283,774, Jul. 16, 1981, Pat. No. 4,482,762.
This application Jun. 25, 1984, Ser. No. 624,090
Claims priority, application Switzerland, Jul. 31, 1980, 5839/80; Jun. 17, 1981, 3996/81
The portion of the term of this patent subsequent to Feb. 25, 2003, has been disclaimed.
Int. Cl.[4] A23L *2/26;* **A61K** *7/46*
U.S. Cl. 426—534 **7 Claims**

1. An odorant and/or flavoring composition comprising an olfactory effective amount of a compound of the formula:



I

wherein:

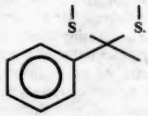
(i) one of the symbols R^1,R^2 and R^3 stands for methyl or ethyl and the others stand for hydrogen, and
(ii) R^4 signifies hydrogen or methyl, with the proviso that R^4 represents hydrogen when R^1 and R^2 both represent hydrogen and R^3 represents methyl and
at least one other olfactory agent.

4,585,663
FLAVORING WITH GEM DITHIOETHERS OF PHENYLALKANES

Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven; Domenick Laccarelli, Jr., Neptune; Kevin P. Miller, Middletown, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jun. 21, 1985, Ser. No. 747,448
Int. Cl.[4] A23L *1/226, 1/235*
U.S. Cl. 426—535 **1 Claim**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from about 0.05 ppm up to about 250 ppm of a gem dithioether of phenylalkane having the structure:



4,585,664
METHOD FOR PRODUCING RICE COMPOSITION AND PRODUCT

David E. Kohlwey, Houston, Tex., assignor to Riviana Foods Inc., Houston, Tex.

Filed Apr. 16, 1984, Ser. No. 600,369
Int. Cl.[4] A23L *1/168*
U.S. Cl. 426—619 **34 Claims**

1. A method for producing a dry instant rice porridge composition, comprising the steps of:
combining a portion of whole grains of dried pregelatinized rice with a portion of broken grains of dried pregelatinzed rice such that some of said whole grains are visible in said dry composition and at the surface of the ready-to-eat food preparation;
adding and mixing therewith a thickening agent in an amount sufficient to assist in creating a final texture in said ready-to-eat food preparation substantially similar to a long-cook rice porridge;
and adding and mixing therewith dehydrated milk solids in an amount sufficient to provide an amount of milk solids in said ready-to-eat food preparation equivalent to the milk solids in said long-cook rice porridge.

4,585,665
PROCESS FOR PREPARING PRESSED TOFU

Ko Sugisawa; Yasushi Matsumura; Kazumitsu Taga; Kouji Sengoku, and Yoshiaki Nagatome, all of Higashiosaka, Japan, assignors to House Food Industrial Co., Ltd., Osaka, Japan

Filed Oct. 18, 1984, Ser. No. 662,188
Claims priority, application Japan, Oct. 20, 1983, 58-196804; Oct. 20, 1983, 58-196805
Int. Cl.[4] A23J *3/00;* **A23L** *1/20*
U.S. Cl. 426—634 **13 Claims**

1. A process for preparing pressed tofu which comprises forming curd by adding a coagulant to soybean milk or an aqueous solution of isolated soybean protein wherein the water content of curd thus formed is between 80 and 92% by weight; subjecting the curd to a dividing treatment that is accompanied

by syneresis so that the amount of water removed from the curd due to syneresis falls within a range of 4 to 46% by weight of water in the curd, charging the divided curd into a pressing container; then pressing the divided curd to reduce the water content to at most 80%, said pressing treatment being carried out with a pressing machine by gradually increasing the pressure from an initial pressure of 0.04–0.6 kg/cm^2 to a final pressure of 0.8–3.2 kg/cm^2.

4,585,666

PREPARATION OF HYDROPHILIC COATING

Hans R. Lambert, Askin, Sweden, assignor to Astra Meditec, Sweden

Continuation of Ser. No. 487,103, Apr. 21, 1983, abandoned. This application Jun. 12, 1984, Ser. No. 619,905
Claims priority, application Sweden, Apr. 21, 1983, 8202523
Int. Cl.^{4} A61M *25/00*
U.S. Cl. 427—2 **5 Claims**

1. A process for placing on a polymer surface a hydrophilic coating which has a low coefficient of friction when wetted with a water-based liquid, which consists essentially of applying to the polymer surface a solution which consists essentially of an organic solvent and between 0.05 to 40% (weight to volume) of an isocyanate monomer having at least two unreacted isocyanate groups per molecule, or an isocyanate prepolymer thereof having up to 5 monomer units, or a mixture of such monomers and pre-polymers, evaporating the solvent, applying a second solution consisting essentially of a solvent between 0.5 to 10% (weight to volume) of polyvinylpyrrolidone containing an amine catalyst in an amount between 0.1 and 50% by weight to the thus treated polymer surface and then evaporating the solvent of the second solution, and curing the coating in the presence of a water-containing gas at elevated temperature; and, wherein said polymer is selected from the group consisting of rubber, latex rubber, vinylpolymers, polyesters, and polyacrylates.

4,585,667

PROCESS FOR PRODUCING PLASTER MODELS FOR USE IN DENTISTRY

Heijo Hübner, Wörthsee, Fed. Rep. of Germany, assignor to ESPE Fabrik Pharmazeutischer Praparate GmbH, Seefeld-/Oberbayern, Fed. Rep. of Germany

Filed Dec. 28, 1984, Ser. No. 687,563
Claims priority, application Fed. Rep. of Germany, Dec. 30, 1983, 3347646
Int. Cl.^{4} A01N *1/02*; B05D *3/06*
U.S. Cl. 427—2 **16 Claims**

1. A process for producing plaster models for use in dentistry which possess an improved resistance to abrasion, bending and pressure which comprises

impregnating a plaster model with (a) at least one photopolymerizable ester of acrylic and/or methacrylic acid and (b) at least one photopolymerization initiator and

irradiating the impregnated plaster model with light suited for initiating the photopolymerization by the photoinitiator.

4,585,668

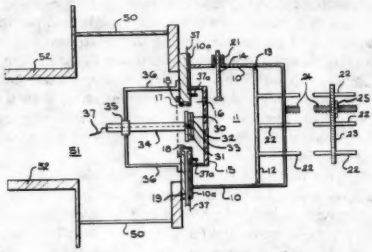
METHOD FOR TREATING A SURFACE WITH A MICROWAVE OR UHF PLASMA AND IMPROVED APPARATUS

Jes Asmussen, Okemos, and Donnie K. Reinhard, East Lansing, both of Mich., assignors to Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 468,897, Feb. 28, 1983, Pat. No. 4,507,588. This application Aug. 16, 1984, Ser. No. 641,190
Int. Cl.^{4} B05D *3/06*
U.S. Cl. 427—38 **16 Claims**

1. A method for treating a surface which comprises:

(a) providing an ion generating apparatus including a plasma source employing a radio frequency, including UHF or microwave, wave coupler, which is metallic and in the shape of a hollow cavity and which is excited in one or more of its TE or TM modes of resonance and optionally including a static magnetic field surrounding the plasma source which aids in coupling at electron cyclotron resonance and aids in confining the ions in the coupler, wherein the plasma is maintained at a reduced pressure in operation, wherein the ion generating apparatus further includes an electrically insulated chamber (**15**) having a central longitudinal axis and mounted in closely spaced relationship to an area (**16**) of the coupler further includes a gas supply means (**18,19**) for providing a gas which is ionized to form the plasma in the insulated chamber, wherein the radio frequency wave applied to the coupler creates and then maintains the plasma in the shape of an elongate, thin plasma disk perpendicular to and surrounding the central axis in the chamber with a surface to be treated in position to receive the ions, further includes a movable metal plate means (**12**) in the hollow cavity mounted perpendicular to the axis and movable towards and away from the plasma disk, and further including a movable probe (**14**) connected to and extending inside the coupler for coupling the radio frequency waves to the coupler, wherein movement of the plate means and the probe in the coupler achieves a selected TE or TM mode of resonance of the radio frequency wave in the coupler and varies the resonance of the mode in order to treat the surface;



(b) forming the plasma disk in the chamber; and

(c) contacting the surface with the ions or free radicals inside the plasma or with ions or neutralized ions removed from the plasma which treat the surface.

4,585,669

NOVEL DUAL CURE SILICONE COMPOSITIONS

Richard P. Eckberg, Saratoga Springs, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 656,047, Sep. 28, 1984, abandoned. This application Sep. 19, 1985, Ser. No. 778,176
Int. Cl.^{4} B05D *3/06*
U.S. Cl. 427—54.1 **49 Claims**

1. In a curable composition containing polymers having silicon-bonded hydrogen atoms and polymers having silicon-bonded acrylate radicals, the improvement comprising at least one part by weight per 100 parts by weight of said polymers having silicon-bonded hydrogen atoms and polymers having silicon-bonded acrylate radicals of at least one free radical photoinitiator and at least one precious metal-containing hydrosilation catalyst for effecting crosslinking of said silicon-bonded hydrogen atoms and said silicon-bonded acrylate radicals.

4,585,670

UV CURABLE SILICONE BLOCK COPOLYMERS

Wan-Li Liu, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jan. 3, 1985, Ser. No. 688,489
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—54.1 42 Claims

1. A silicone block copolymer composition, comprising:

(a) at least one block consisting essentially of from about 6 to about 120 units of the formula

$$R_2SiO,$$

(b) at least one block consisting essentially of from about 3 to about 160 units of the formula

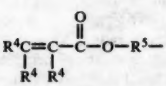
$$R^1SiO_{1.5},$$

and

(c) at least one block consisting essentially of from about 0.1 to about 20 mole percent of (a) and (b) of units of the formula

$$R^3RSiO;$$

where R is an independently selected alkyl radical having 1 to 5 carbon atoms, aryl radical having 6 to 10 carbon atoms, or aralkyl radical having 6 to 10 carbon atoms; R^1 is an aryl or aralkyl radical having 6 to 10 carbon atoms; and R^3 is an acrylic-functional radical having the general formula



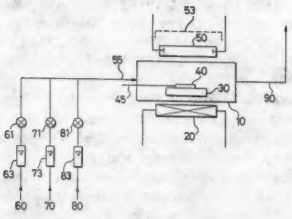
where the R^4 radicals are the same or different and represent hydrogen atoms or monovalent substituted or unsubstituted hydrocarbon radicals having from 1 to 12 carbon atoms and R^5 is a divalent substituted or unsubstituted hydrocarbon radical having from 2 to 12 carbon atoms.

4,585,671

FORMATION PROCESS OF AMORPHOUS SILICON FILM

Nobuhisa Kitagawa, Tokyo; Masataka Hirose, Hiroshima; Kazuyoshi Isogaya, Tokyo, and Yoshinori Ashida, Higashi-Hiroshima, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

PCT No. PCT/JP83/00411, § 371 Date Jul. 6, 1984, § 102(e) Date Jul. 6, 1984, PCT Pub. No. WO84/02035, PCT Pub. Date May 24, 1984
PCT Filed Nov. 15, 1983, Ser. No. 629,843
Claims priority, application Japan, Nov. 15, 1982, 57-199060
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—54.1 7 Claims



1. A process for forming an amorphous silicon film, which process comprises subjecting a gaseous higher silane represented by the following general formula

$$Si_nH_{2n+2}$$

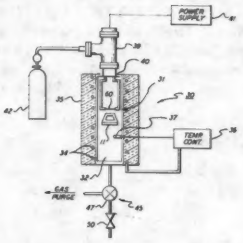
wherein n stands for an integer of 2 or greater to photo-chemical decomposition under radiation of light having a wavelength of 300 nm or shorter, at a temperature of 100° to 300° C. and at a pressure of atmospheric pressure or higher so as to cause amorphous silicon to deposit on a substrate.

4,585,672

HYDROGEN CHARGED THIN FILM CONDUCTOR

James A. Schwarz, Fayetteville, and Robert W. Pasco, Wappingers Falls, both of N.Y., assignors to Syracuse University, Syracuse, N.Y.

Division of Ser. No. 477,503, Mar. 21, 1983, Pat. No. 4,525,734.
This application Feb. 27, 1985, Ser. No. 706,175
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—88 14 Claims



1. A method of manufacturing an electrical conductive stripe having a high resistance to electromigration failure that includes the steps of

alloying a conductive metal, of the type subject to electromigration under high current densities, with at least one other metal element serving as a hydrogen storage element capable of forming a chemically bonded compound with hydrogen,

depositing upon a substrate the alloy in the form of a thin film stripe,

exposing said alloy stripe to a hydrogen atmosphere,

heating the stripe while exposed to the hydrogen atmosphere to a temperature at which the hydrogen reacts with said storage element to form a compound therewith to store the hydrogen in compound form in said storage element, and

cooling said alloy to room temperature.

4,585,673

METHOD FOR COATING PHOSPHOR PARTICLES

A. Gary Sigai, Lexington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Continuation-in-part of Ser. No. 607,846, May 7, 1984, abandoned. This application Apr. 3, 1985, Ser. No. 718,096
Int. Cl.[4] B05D 5/06, 5/12, 7/00; C23C 16/00
U.S. Cl. 427—213 28 Claims

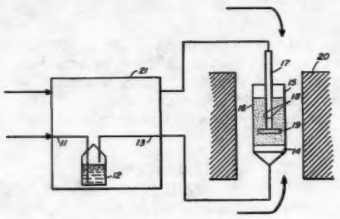
1. A method for forming a protective coating on phosphor particles comprising:

(a) fluidizing particles of a phosphor powder in a fluidized bed;

(b) exposing the fluidized particles to a vaporized coating precursor at a first temperature to envelop the particles with coating precursor material, said first temperature being less than the temperature at which the coating precursor material decomposes; and

(c) reacting the coating precursor material enveloping the fluidized particles at a second temperature to form a con-

tinuous protective coating of predetermined thickness on the surface of individual phosphor particles, said second



temperature being greater than or equal to the temperature at which the coating precursor material reacts to form the protective coating.

4,585,674

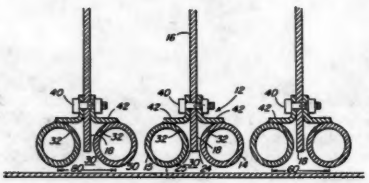
METHOD FOR CONTINUOUS COATING OF GLASS

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

Division of Ser. No. 521,675, Aug. 10, 1983, Pat. No. 4,524,718, which is a continuation-in-part of Ser. No. 443,340, Nov. 22, 1982, abandoned. This application Feb. 25, 1985, Ser. No. 704,609

Int. Cl.[4] C23C *16/40*

U.S. Cl. 427—255 **8 Claims**



1. A process for forming a metal oxide coating by reacting a water vapor reactant and a metal halide reactant in close proximity to a moving glass substrate, comprising the steps of

(a) primarily distributing said reactants through relatively small apertures spaced along tubes transverse to the direction of the glass substrate;

(b) secondarily distributing said reactants through passages which are at least twice as wide as said aperture;

(c) allowing said reactants to mix in a reaction zone at a position within a zone depth less than one inch from said substrate; and

(d) depositing said coating onto said glass over a coating zone along said moving glass, the width of said coating zone being at least twice said zone depth.

4,585,675

ALUMINA SILICON CARBIDE, AND SILICON PRIMARY PROTECTIVE COATINGS FOR CARBON-CARBON SUBSTRATES

David M. Shuford, Grand Prairie, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Continuation-in-part of Ser. No. 251,798, Apr. 7, 1981, abandoned. This application Aug. 1, 1983, Ser. No. 518,831

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—376.2 **14 Claims**

1. A method for forming a primary coating on a carbonaceous substrate for protecting the substrate from degradation at elevated temperatures comprising:

(a) forming an essentially uniform mixture of particulate silicon present in an amount of between about 40% and 50% by weight of the total mixture, particulate silicon carbide present in an amount of between about 30% and 50% by weight of the total mixture and particulate alumina present in an amount of between about 20% and 30% by weight of the total mixture;

(b) contacting the substrate with said mixture; and

(c) thereafter heating said mixture and the substrate in the range of between about 2950° F. and 3100° F. in an inert atmosphere for a period of time sufficient to form a coating of the desired thickness on the substrate.

4,585,676

DECORATIVE PULL-STRING BOWS

Vicki M. DeSmet, and Gregory L. DeSmet, both of 1909 E. Huntington Dr., Duarte, Calif. 91010

Filed Jan. 6, 1984, Ser. No. 568,709

Int. Cl.[4] A41G *1/00*; **D04D** *7/10*

U.S. Cl. 428—5 **31 Claims**

1. A decorative bow, comprising:

an elastic drawstring;

a first ribbon having a first plurality of cuts in a first edge and a second plurality of cuts in a second edge, said first ribbon having a first plurality of bridging areas formed between the first plurality of cuts and the second plurality of cuts and a first plurality of uncut areas formed between the first plurality of bridging areas;

a second ribbon having a third plurality of cuts in a third edge and a fourth plurality of cuts in a fourth edge, said second ribbon having a second plurality of bridging areas formed between the third plurality of cuts and the fourth plurality of cuts and a second plurality of uncut areas formed between the second plurality of bridging means, said second ribbon being connected to the drawstring and the first ribbon, the drawstring being connected between the first ribbon and the second ribbon;

a plurality of bands encircling the first plurality of bridging areas, the second plurality of bridging areas and the drawstring, said drawstring being held between the first plurality and the second plurality of bridging areas; and

a bow support having a drawstring opening through which the drawstring is pulled to force the first and the second ribbons into a plurality of loops against the bow support.

4,585,677

ARTIFICIAL PLANT

Herbert Hwang, Taipei, Taiwan, and Henry Weitz, Prosperity House, 11th Floor, 8A-10 Granville Rd., Kowloon, Hong Kong, assignors to Henry Weitz, Kowloon, Hong Kong

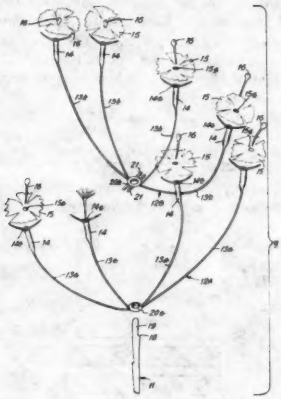
Filed Jul. 11, 1985, Ser. No. 753,957

Int. Cl.[4] A41G *1/00*

U.S. Cl. 428—26 **4 Claims**

1. An artificial representation of a plant comprising a main stem having an apex portion at an end thereof, and a plurality of stem-defining members each molded of plastic and including a collar and a plurality of stem portions arising from said collar and being arranged substantially coplanar with each other, at least one of said stem-defining members further having at least one bifurcated projection extending from said collar of said one stem-defining member and embracing a stem portion of another of said stem-defining members when the collars of said

stem-defining members are disposed one above the other on said apex portion of the main stem, to hold said stem-defining members against turning relative to each other about said apex portion of the main stem, each said bifurcated projection being



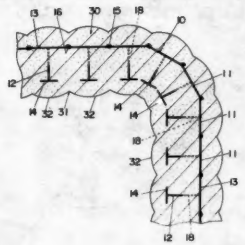
arranged on the respective collar to maintain the stem portions of said one stem-defining member in a plane angularly displaced from the plane of the stem portions of each other of said stem-defining members.

4,585,678

STEEL SHEET PILE, SHEET PILE ASSEMBLY THEREOF AND THE METHOD OF CONSTRUCTING THE ASSEMBLY

Mitsuhiro Kunito, Osaka, Japan, assignor to Kabushiki Kaisha ASK Kenkyusho, Osaka, Japan

Filed Jul. 11, 1984, Ser. No. 629,664
Int. Cl.[4] E02D *5/02*
U.S. Cl. 428—33 **6 Claims**



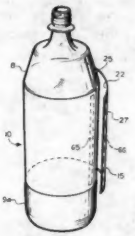
1. A steel sheet pile which in use is to be arranged in side edge to side edge relationship with adjacent piles of like construction to form the wall of an excavation, said sheet pile having a generally H-shaped cross section comprising a web with a relatively wide flange on one side thereof, said wide flane having formed integral with and extending along its side edges, joint elements for interconnection with the joint elements integral with and extending along the side edges of the relative wide flanges of adjacently disposed sheet piles and with a relatively narrow reinforcing flange on the other side of said web, the thickness of said narrow reinforcing flange being greater than the thickness of said wide flange.

4,585,679

COEXTRUDED MULTILAYER SHEET AND TOUGH SLEEVE LABEL MADE THEREFROM

James A. Karabedian, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 14, 1985, Ser. No. 691,256
Int. Cl.[4] B65D *23/08*; B32B *27/08*
U.S. Cl. 428—35 **9 Claims**



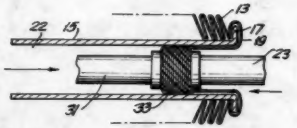
1. A coextruded multilayer sheet adapted to form a sleeve label for a container, the sheet comprising a polystyrene foam layer adapted to be wrapped next to the container and a solid skin layer adapted for decoration, the solid skin layer being extruded from a blend comprising about 50 to 70 parts by weight of linear low density polyethylene, about 20 to 60 parts by weight of a block copolymer of styrene and butadiene, and about 0 to 10 parts by weight of polystyrene; the amount of block copolymer being sufficient to balance the adhesion between the foam layer and the skin layer at the interface thereof, the adhesion being enough to prevent premature delamination and tearing and the adhesion being low enough to maximize the toughness of the label.

4,585,680

SHIRRED CASING STICK ARTICLE WITH END CLOSURE DISPLACED WITHIN STICK BORE

Joseph A. Nausedas, Oak Forest, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed May 2, 1983, Ser. No. 490,966
Int. Cl.[4] B65D *29/00*; A22C *13/00*
U.S. Cl. 428—36 **6 Claims**



1. A shirred casing stick article mounted on a support tube having an axially compressed end closure implanted in the support tube at a position within a last-to-be-stuffed nine-tenths of the shirred casing stick, said axially compressed plug end closure being formed from inwardly turned casing from a first-to-be-stuffed end of the shirred casing stick.

4,585,681

FROST DAMAGE PROOFED PILE

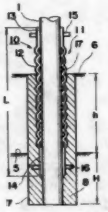
Kenji Kidera, 2531 Ozenji, Aso, Kawasaki, Kanagawa; Shigeru Nakagawa, 44-2 Makigahara, Asahi, Yokohama, Kanagawa; Takashi Takeda, 8-8-1 Hisagi, Zushi, Kanagawa; Katsumi Omori, 2-17-22 Higiriyama, Konan, Yokohama, Kanagawa, and Toshiyuki Okuma, 5-16-8 Nagao, Tama, Kawasaki, Kanagawa all of Japan

Filed Jun. 26, 1984, Ser. No. 624,750

Claims priority, application Japan, Jun. 29, 1983, 58-116037; Jun. 29, 1983, 58-116038; Jun. 29, 1983, 58-116039; Jun. 29, 1983, 58-116040; Jun. 29, 1983, 58-99298[U]; Jun. 29, 1983, 58-99299[U]; Aug. 3, 1983, 58-141183; Aug. 3, 1983, 58-141184; Aug. 5, 1983, 58-121282[U]

Int. Cl.⁴ E02D *5/60*

U.S. Cl. 428—36 **36 Claims**



1. In a frost damage proofed pile installed in a frigid area where the pile is subjected to a frost heaving force, the improvement comprising a tubular sheath member fitted over the pile surface, said sheath member having a length longer than the thickness of an active or seasonally frozen soil layer of the terrain in which the pile is installed, at least a portion of said length defined by a series of ribs extending transversely outwardly of said sheath member relative to a lengthwise axial line as an extensible section, the lower end of said sheath member being secured to the pile at or below a position corresponding to the bottom region of said active or seasonally frozen soil layer, the upper end of the sheath member being secured to the pile at a position above the ground surface, and a fluid material being filled in a space defined between said pile and the sheath member.

4,585,682

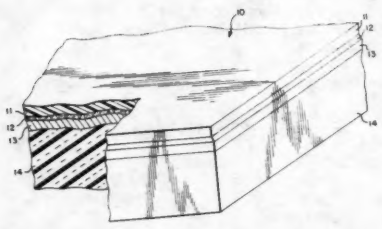
ROOFING MEMBRANES

Peter C. Colarusso, Saugus, and Bahram Sindat, Boxboro, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed May 23, 1983, Ser. No. 497,451

Int. Cl.⁴ B32B *3/00, 7/02, 7/04, 7/12*

U.S. Cl. 428—57 **31 Claims**



17. A waterproofing roofing assembly comprising a roof-deck substrate having disposed thereover a plurality of membranes comprising:

(a) a layer of shrinkable polymer film having a shrinkage onset temperature above 100° F.;

(b) a layer of a foil having a lower coefficient of thermal expansion than said polymer film below said shrinkage onset temperature; and

(c) a layer of a thermoplastic adhesive positioned between and adhering said film and said foil, said adhesive having sufficient bonding strength below said onset temperature to substantially inhibit relative movement between said film and said foil and having sufficient plasticity above said shrinkage onset temperature to permit relative movement between said film and said foil.

18. An assembly of claim **17** wherein said membranes are disposed in overlapping fashion.

4,585,683

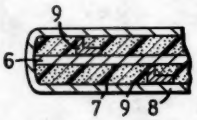
STRUCTURAL PANEL

Richard D. Curnow, Chipping Sodbury, England, assignor to Bristol Composite Materials Engineering Ltd., Bristol, England

Filed Nov. 29, 1984, Ser. No. 676,269

Int. Cl.⁴ B32B *3/26, 5/32*

U.S. Cl. 428—71 **5 Claims**



1. Structural panel comprising (a) a central layer of an armour material (b) said central layer being bonded between layers of a phenolic foam plastics material (c) said phenolic foam plastics material having internal stiffeners so as to increase the rigidity of the panel and (d) a woven fibre cloth impregnated with a phenolic resin, said woven fibre cloth surrounding a major part of the surface of the foam plastics material.

4,585,684

EMBOSSED CREST, BADGE AND THE LIKE WEARING ORNAMENT AND METHOD OF MAKING THE SAME

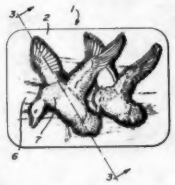
George Mackarous, 1830 Parent Street, Laval, Canada (H7E 3Z1)

Filed Nov. 9, 1984, Ser. No. 669,968

Claims priority, application Canada, Oct. 10, 1984, 465094

Int. Cl.⁴ B32B *31/20*; B44C *3/02*

U.S. Cl. 428—79 **6 Claims**



1. A wearing ornament such as a badge, crest and the like, made of a laminated fabric which comprises a first cover layer of woven fabric which is stretchable in two perpendicular directions, said first layer having an image prited on its exposed surface; a second layer die-cut of flexible and compressible foamed synthetic resin and having a generally constant thickness when not compressed; a third layer of adhesive; and a fourth flexible but stiff backing layer, said first, third, and fourth layers being substantially co-extensive, said second layer having smaller dimensions than the remaining layers, said first and fourth layers being directly adhered by said third layer all around said second layer in registry with one another, said first layer being stretched by said second layer and com-

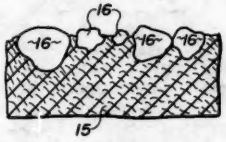
pressing the marginal portions of said second layer to a higher degree than the central portion of said second layer, so as to define an embossed ornament of uniform thickness in the area surrounding said second layer, and of a varying thickness in the area across said second layer wherein said first layer remains wrinkle-free, said second layer having a contour similar to a central portion of said image and registering therewith.

4,585,685

ACOUSTICALLY POROUS BUILDING MATERIALS

John S. Forry, Manor Township, Lancaster County, and Karl B. Himmelberger, Lancaster, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jan. 14, 1985, Ser. No. 590,990
Int. Cl.[4] B32B *17/06, 19/04, 31/14;* E04B *1/82*
U.S. Cl. 428—143 46 Claims



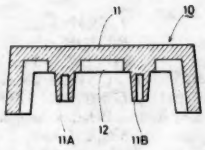
24. An acoustically porous composite comprising an aggregate surfacing material on a dry-formed web comprising substantially fibrous material and organic binder, said web having the majority of said aggregate material at least partially embedded therein, the surface of said composite possessing the contour of the means used to effect consolidation.

4,585,686

TWO-LAYER STRUCTURE MOLDED BY USING THERMOPLASTIC RESIN

Tadashi Hasegawa, Nagoya; Kazuyuki Izumo, Aichi; Katsuyuki Enomoto, Aichi, and Nobuyoshi Sugie, Aichi, all of Japan, assignors to Aron Kasei Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1984, Ser. No. 682,432
Claims priority, application Japan, Dec. 28, 1983, 58-204834[U]
Int. Cl.[4] B32B *3/30, 27/06*
U.S. Cl. 428—172 6 Claims



1. A two-layer structure molded by using thermoplastic resin, comprising one layer (a) of thermoplastic resin in which no electroconductive filler is mixed, and the other layer (b) of thermoplastic resin in which electroconductive filler is mixed wherein one or more projections which penetrate said layer (b) are formed on said layer (a); and wherein the diameters of said one or more projections is not greater than 1/60 the wavelength of the electromagnetic wave effecting on said two-layer structure.

4,585,687

COPOLYESTER PRIMED POLYESTER FILM

Robert G. Posey, Taylors, and Edwin C. Culbertson, Greer, both of S.C., assignors to American Hoechst Corporation, Somerville, N.J.

Division of Ser. No. 495,192, May 16, 1983, Pat. No. 4,476,189.
This application Apr. 30, 1984, Ser. No. 605,434
Int. Cl.[4] B05D *3/00;* B32B *5/16, 27/36*
U.S. Cl. 428—195 1 Claim

1. A self-supporting biaxially oriented polyethylene terephthalate film having a continuous copolyester primer coating on one or both sides thereof, said polyethylene terephthalate film prepared by melt extruding a substantially amorphous polyethylene terephthalate film and thereafter orienting the film by stretching in two directions and heat setting the film, said copolyester primer coating being applied to said film as an aqueous dispersion subsequent to stretching in one direction but prior to stretching in a mutually perpendicular direction, said copolyester primer coating consisting essentially of the polyester condensation product of the following monomers or their polyeser forming equivalents:

(A) about 60 to 75 mole percent of terephthalic acid;

(B) about 15 to 25 mole percent of at least one aliphatic dicarboxylic acid of the formula $HOOC(CH_2)_nCOOH$, wherein n ranges from about 1–11;

(C) greater than from about 6 up to about 15 mole percent of at least one sulfomonomer containing an alkali metal sulfonate group attached to a dicarboxylic aromatic nucleus, and

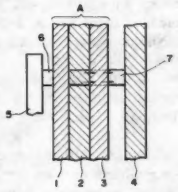
(D) stoichiometric quantities of about 100 mole percent of at least one copolymerizable aliphatic or cycloaliphatic alkylene glycol having about from 2 to 11 carbon atoms, said copolyester primed polyethylene terephthalate film having a printing ink composition applied directly to at least a portion of said primer coating, said printing ink composition comprising an aqueous or organic solvent based printing ink.

4,585,688

THERMOGRAPHIC TRANSFER RECORDING MEDIUM

Masaki Nakamura; Shigehiro Kitamura, both of Hachioji; Takao Abe, Tokyo, and Tawara Komamura, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 558,786, Dec. 6, 1983, abandoned, and Ser. No. 538,580, Oct. 3, 1983, abandoned. This application Jan. 2, 1985, Ser. No. 688,741
Claims priority, application Japan, Oct. 4, 1982, 57-175138; Dec. 13, 1982, 57-217063; Dec. 15, 1982, 57-218336
Int. Cl.[4] B32B *3/18;* B41M *5/26*
U.S. Cl. 428—200 18 Claims



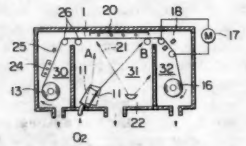
1. A thermographic transfer recording medium comprising a support, a transfer layer containing a low melting point compound having a melting point or softening point in the range of 45° C. to 150° C. and capable of dissolving or dispersing a coloring agent at the time of being fused, and a coloring agent layer provided between said support and said transfer layer, said coloring agent layer containing said coloring agent and a non heat-fusible polymer having a melting point or softening point at least 50° C. higher than that of said low melting point compound as a bonding agent.

4,585,689

TRANSPARENT CONDUCTIVE OPTICAL DEVICE AND A PROCESS FOR THE PRODUCTION THEREOF

Tatsuo Ohta, and Katsuaki Komatsu, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1984, Ser. No. 658,599
Claims priority, application Japan, Oct. 8, 1983, 58-188835
Int. Cl.[4] B32B *7/02;* B05D *5/06, 5/12*
U.S. Cl. 428—216 9 Claims



1. A transparent conductive optical device which comprises a transparent conductive layer of a metal oxide provided on a substrate, characterized in that the degree of oxidation of said transparent conductive layer is differentiated depending on the proximity to said substrate such that the degree of oxidation of said transparent conductive layer adjacent to said substrate is made higher than that of the remaining part thereof.

4,585,690

CELLULAR GLASS REINFORCED COMPOSITE MATERIAL

James G. Busse, 5830 Ferree Street, Pittsburgh, Pa. 15217

Filed Nov. 5, 1984, Ser. No. 668,092
Int. Cl.[4] B32B *17/00, 5/18*
U.S. Cl. 428—304.4 2 Claims

1. A composite material consisting of a reinforcement structure composed of cellular glass having a lattice of intercommunicating cells and imbedded in a continuous resin matrix.

2. The use of the composite material as set forth in claim 1 in combination with and bonded to one or more external reinforcement materials.

4,585,691

FRICTION MATERIAL WITH FLAME SPRAYED METAL COATING

Akira Nishimura; Kazuaki Kawasaki; Yasuo Nakano; Hiromichi Horie; Hiroshi Ushiyama; Mikio Manabe, all of Hitachi; Hikaru Maeyama, Ibaraki; Saburo Abe, Atsugi; Masakazu Tambara, Hamamatsu; Yuji Takahashi, Tokorozawa, and Yasuo Katagiri, Hadano, all of Japan, assignors to Hitachi Chemical Co., Ltd.; Nissan Motor Co., Ltd. and Atusgi Motor Parts Co., Ltd., all of Tokyo, Japan

Filed Nov. 4, 1982, Ser. No. 439,197
Claims priority, application Japan, Nov. 6, 1981, 56-178772
Int. Cl.[4] B05B *7/20;* B32B *19/04*
U.S. Cl. 428—311.1 7 Claims

1. A friction material for preventing the occurrence of rust of an associated iron-containing contact surface, said friction material comprising a friction material substrate and a metal coating obtained by flame spraying a metal which will provide a sacrificial anode for iron on the surface of the friction material substrate in an amount of 0.5 mg/cm^2 to 8.0 mg/cm^2; said metal being selected from the group consisting of zinc, aluminum, a magnesium alloy and a mixture thereof and said friction material substrate being obtained by molding with heating under pressure a mixture consisting essentially of at least one fibrous material selected from the group consisting of asbestos, glass fibers, ceramic fibers and spun rayon, at least one wear resistant powder selected from the group consisting of cashew nut shell oil powder, rubber particles, cork powder and wood powder, and a thermosetting resin as a binder.

4,585,692

ALIPHATIC POLYURETHANE MATRIX TRANSFER MEDIUM AND POROUS MAGNESIUM SILICATE FILLER

David R. Klueh; Benjamin F. Livingston; James F. Martone, and Martin J. Zutt, Jr., all of Lexington, Ky., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 15, 1984, Ser. No. 621,279
Int. Cl.[4] B41M *5/02*
U.S. Cl. 428—317.9 10 Claims

1. A matrix transfer medium comprising an aliphatic polyester polyurethane resin body holding a colored fluid ink in voids throughout said resin body and particulate porous magnesium silicate as a filler in said resin body, said resin body being deformable under impact to release said ink in printed images conforming to said impact.

4,585,693

POLYMER-BOUND ULTRAVIOLET STABILIZER COATING COMPOSITIONS CONTAINING CROSS LINKERS

Michael DeBergalis, and Robert P. O'Fee, both of Wilmington, Del., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 469,688, Feb. 25, 1983, Pat. No. 4,495,325.
This application Dec. 21, 1984, Ser. No. 684,939
Int. Cl.[4] B32B *5/16, 19/00*
U.S. Cl. 428—324 1 Claim

1. A substrate coated with a cured coating of a coating composition containing an ultraviolet stabilizer polymer which absorbs ultraviolet radiation and effectively dissipates the resulting energy as heat, but which does not contain effective amounts of ultraviolet sensitizer, said polymer of said coating composition comprising, by weight 12.5–50% of a first moiety which absorbs ultraviolet energy, said first moiety being bound to a polymeric second moiety to produce said ultraviolet stabilizer polymer containing, by weight, 12.5–80% of said first moiety,

said coating composition also containing a cross-linking species which aids in cure of said coating by cross linking with said stabilizer polymer,

said cured coating being a multilayer coating wherein the outer layer is unpigmented and at least one inner layer contains at least one of pigments, mica, pigment-coated mica flake and metallic flake.

4,585,694

MULTI-LAYERED THERMOPLASTIC STRUCTURES COMPRISING A LAYER OF A VINYL OR VINYLIDENE FLUORIDE POLYMER BONDED TO A LAYER OF AN ALPHA-OLEFIN POLYMER

Claude Dehennau, Waterloo, Belgium, assignor to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Apr. 25, 1984, Ser. No. 603,917
Claims priority, application France, Apr. 27, 1983, 83 07087
Int. Cl.[4] C07J *7/02*
U.S. Cl. 428—355 18 Claims

1. Multi-layered thermoplastic structures comprising a layer of a vinyl or vinylidene fluoride polymer bonded to a layer of an alpha-olefin polymer, characterized in that the layer of a vinyl or vinylidene fluoride polymer is bonded to the layer of an alpha-olefin polymer using both a vinyl acetate polymer and a copolymer of ethylene and vinyl acetate as polymeric adhesives.

4,585,695

ELECTRICALLY CONDUCTIVE POLYPYRROLE ARTICLE

Makoto Ogasawara, and Kazutoshi Funahashi, both of Tokyo, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 20, 1984, Ser. No. 652,488
Claims priority, application Japan, Oct. 11, 1983, 58-188466; Oct. 21, 1983, 58-196062; Oct. 21, 1983, 58-196063
Int. Cl.[4] D02G 3/00; C25B 1/00
U.S. Cl. 428—364 10 Claims

1. An oriented electrically conductive polypyrrole article of doped polypyrrole having a degree of orientation of at least 40% in at least one direction wherein said polypyrrole is selected from the group consisting of a homopolymer of pyrrole, a homopolymer of a pyrrole derivative, copolymers of pyrrole and copolymers of said pyrrole derivatives, wherein said pyrrole derivatives are selected from the group consisting of N-C_{1-5} alkyl derivatives, N-phenyl derivatives, substitution products of the N-phenyl derivatives, and derivatives obtained by substituting a C_{1-5} alkyl or alkoxy group at the beta-position of the pyrrole ring.

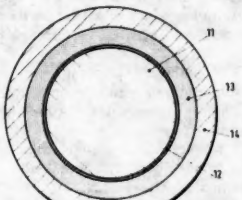
8. An electrically conductive doped polypyrrole article having an electrical conductivity of at least 200 S/cm wherein said polypyrrole is selected from the group consisting of a homopolymer of pyrrole, a homopolymer of a pyrrole derivative, copolymers of pyrrole and copolymers of said pyrrole derivatives, wherein said pyrrole derivatives are selected from the group consisting of N-C_{1-5} alkyl derivatives, N-phenyl derivatives, substitution products of the N-phenyl derivatives, and derivatives obtained by substituting a C_{1-5} alkyl or alkoxy group at the beta-position of the pyrrole ring.

4,585,696

SUPERCONDUCTING FIBER

Cord-Heinrich Dustmann, Weinheim; Georg Wahl, Eppelheim; Franz Schmaderer, Heidelberg; Erich Fitzer, Karlsruhe; Karl Brennfleck, Karlsruhe; Manfred Dietrich, Karlsruhe, and Lienhard Paterok, Graben-Neudorf, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim and Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, both of, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,332
Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319524
Int. Cl.[4] D02G 3/00; B32B 9/00; H01B 5/00
U.S. Cl. 428—375 4 Claims



1. A superconducting fiber comprising a carrier fiber selected from the group consisting of steel, carbon and boron, a base layer of a carbide covering the outer surface of the carrier fiber, and a superconducting layer comprising a niobium-containing compound adhering to the base layer and surrounding the outer surface of the carrier fiber.

4,585,697

MAGNETIC RECORDING MEDIUM

Hirohisa Kato, Ebina; Toshihiko Oguchi, Atsugi, and Yuji Doki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 26, 1984, Ser. No. 654,465
Claims priority, application Japan, Sep. 28, 1983, 58-177874
Int. Cl.[4] G11B 5/70
U.S. Cl. 428—403 10 Claims

1. A magnetic recording medium comprising a substrate coated with a mixture which consists essentially of (1) a ferrite magnetic powder comprised of particles having (i) a hexagonal plate-like configuration and (ii) an average particle diameter of 0.2 μm or less and (2) a binder resin having an active hydrogen equivalent of 2,000 or more.

4,585,698

METHOD OF COATING FIXED RESISTORS WITH A ONE-COMPONENT EPOXY RESIN COATING MATERIAL AND FIXED RESISTORS COATED WITH SAID ONE-COMPONENT EPOXY RESIN COATING MATERIAL

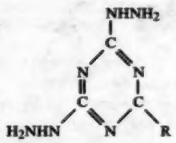
Kenji Anzai, Kobe; Tatsuo Hamabe, Osaka; Ichiro Watanabe, Nishinomiya, and Yoshiaki Naganuma, Amagasaki, all of Japan, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 9, 1984, Ser. No. 669,704
Claims priority, application United Kingdom, Nov. 17, 1983, 8330649
Int. Cl.[4] B32B 27/38
U.S. Cl. 428—413 6 Claims

6. A coated fixed resistor, wherein the coating material comprises the cured product of

(A) an epoxy resin or a mixture of epoxy resins having at least one epoxy group per molecule,

(B) as a hardener for the epoxy resin at least one aromatic dicarboxylic acid dihydrazide or a triazine compound of the formula I



(I)

wherein R represents an alkylamino or dialkylamino group having 1 or 2 carbon atoms in the alkyl moieties, or a phenylamino or hydrazino group, or a mixture of an aromatic dicarboxylic acid dihydrazide and a triazine compound of the formula I, and

(C) an anti-sagging agent or aninorganic filler or a mixture of anti-sagging agent and an inorganic filler.

4,585,699

METHOD OF APPLYING MICROWAVE ENERGY TO HEAT TREATING COATINGS ON DIELECTRIC SUPPORTS, IN PARTICULAR ELECTRICALLY CONDUCTIVE COATINGS, AND PRODUCTS OBTAINED BY THE METHOD

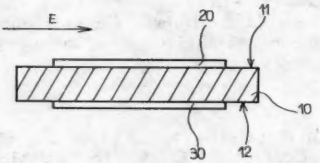
André-Jean Berteaud, Draveil; René Clement, Brunoy, and Alain Germain, Bagneux, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Sep. 18, 1984, Ser. No. 651,834
Claims priority, application France, Sep. 21, 1983, 83 14989
Int. Cl.[4] B05D 3/02, 5/12; B32B 15/08, 27/38
U.S. Cl. 428—418 10 Claims

1. A method of heat treating a coating deposited on a dielectric support, by the application of microwave energy, the method comprising the following steps:

(1) depositing the coating to be treated on a first face of the dielectric support;

(2) depositing a layer of electrically conductive material on a second face of the dielectric support opposite to the first face and generally parallel thereto, the thickness of said layer being not greater than 10 δ, where δ is the penetration depth in the material thereof of the selected electromagnetic wave; and



(3) applying microwave energy to the assembly thus constituted in such a manner that the direction of vibration of the electric field is substantially parallel to the coating to be treated and to the layer of conductive material.

10. A product obtained by performing the method of claim 1.

4,585,700

POLY(ARYLENE SULFIDE) COMPOSITION MOLDING METHOD AND ARTICLE OF MANUFACTURE

Timothy W. Johnson, and Francis X. Mueller, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 558,677, Dec. 6, 1983, Pat. No. 4,529,769. This application Apr. 30, 1985, Ser. No. 728,911

Int. Cl.[4] B32B *27/06;* H01G *9/00;* B28B *1/02*

U.S. Cl. 428—419 18 Claims

1. In a rotational molding method in which a poly(arylene sulfide) resin is rotationally-molded in a mold comprising corrodible metal, the improvement which compises using a molding composition comprising a poly(arylene sulfide) resin and a hydrotalcite.

8. An article of manufacture comprising

(a) a molded part of poly(arylene sulfide) resin comprising a hydrotalcite; and

(b) a liquid eletrolyte.

13. A capacitor comprising

(a) a molded part comprising hydrotalcite-containing poly(arylene sulfide) resin;

(b) a liquid electrolyte; and

(c) two metal electrodes.

4,585,701

COMPOSITES OF POLYVINYLIDENE FLUORIDE ALLOYS AND THERMOPLASTIC POLYMERS AND THEIR PREPARATION

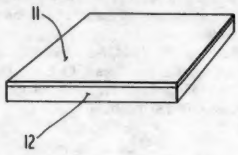
Edward J. Bartoszek, Jeffersonville, Pa., and Steven F. Mones, Newark, Del., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 15, 1984, Ser. No. 580,483

Int. Cl.[4] B32B *27/08*

U.S. Cl. 428—421 11 Claims

1. A polymer composite comprising a protective layer comprising an alloy of polyvinylidene fluoride and an acrylate polymer which layer is directly bound to a substrate comprising a homogeneous mixture of a thermoplastic polymer which



is incompatible with polyvinylidene fluoride and scrap polymer composite material.

4,585,702

MAGNETIC RECORDING MEDIUM

Claiborn L. Osborn, and Joseph V. Koleske, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,390

Int. Cl.[4] G11B *5/70*

U.S. Cl. 428—425.9 27 Claims

1. A magnetic recording medium comprising a substrate and a magnetic recording layer thereon comprising a cured binder and magnetic particles, the binder comprising the reaction product of a lactone-acrylate adduct with:

(a) a multi-functional isocyanate;

(b) a polyol and a multi-functional isocyanate;

(c) a polyol, a multi-functional isocyanate, and a hydroxyalkyl acrylate; or

(d) a polyol, a multi-functional isocyanate, a hydroxyalkyl acrylate and a reactive solvent.

17. A magnetic recording medium as defined in claim 1 wherein the binder comprises the reaction product of a lactone-acrylate adduct with a polyol, a multifunctional isocyanate and an hydroxyalkyl acrylate.

4,585,703

METHOD OF TREATING WOODY MATERIAL AND TREATED WOODY MATERIAL

Hiroshi Taguchi, Sakai; Tsunehiko Nishimura, Higashiosaka, and Nobuo Kobayashi, Kawaguchi, all of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,606

Claims priority, application Japan, Nov. 15, 1982, 57-199033; Dec. 28, 1982, 57-227530

Int. Cl.[4] B32B *9/04;* B05D *3/02*

U.S. Cl. 428—446 11 Claims

1. A method for treating a woody material, which comprises treating the woody material with a treating agent comprising a mixture or reaction product of a triazine-thermosetting resin and a phosphonic acid compound selected from the group consisting of

(1) methyl 3-(dimethylphosphono)propionate,

(2) ethyl 3-(dimethylphosphono)propionate,

(3) N,N-dimethylaminoethyl 3-(dimethylphosphono)-2-methylpropionate,

(4) dimethyl 3-dimethylphosphonosuccinate,

(5) dimethyl diphenylphosphonosuccinate,

(6) dimethyl methylphosphonate,

(7) 3-(dimethylphosphono)propionamide,

(8) 3-(diethylphosphono)propionamide,

(9) 3-(diisopropylphosphono)propionamide,

(10) N-methylol-3-(dimethylphosphono)propionamide,

(11) N-methylol-3-(diethylphosphono)propionamide,

(12) N-methylol-3-(diisopropylphosphono)propionamide,

(13) N-methylol-3-(diethylphosphono)-2-methyl-propionamide,

(14) (2-hydroxyethyl)-3-(dimethylphosphono)propionate,

(15) (2-hydroxyethyl)-3-(diisopropylphosphono)propionate,

(16) (2-hydroxyethyl)-3-(diethylphosphono)-2-methyl-propionate,
(17) glycidyl 3-(dimethylphosphono)propionate,
(18) glycidyl 3-(diethylphosphono)propionate, and
(19) glycidyl 3-(diethylphosphono)-2-methyl-propionate,

2. A method for treating a woody material, which comprises treating the woody material with a treating agent comprising a mixture or reaction product of a triazine thermosetting resin and a phosphonic acid compound selected from the group consisting of
(1) methyl 3-(dimethlphosphono)propionate,
(2) ethyl 3-(dimethylphosphono)propionate,
(3) N,N-dimethylaminoethyl 3-(dimethylphosphono)-2-methylpropionate,
(4) dimethyl 3-dimethylphosphonosuccinate,
(5) dimethyl diphenylphosphonosuccinate,
(6) dimethyl methylphosphonate,
(7) 3-(dimethylphosphono)propionamide,
(8) 3-(diethylphosphono)propionamide,
(9) 3-(diisopropylphosphono)propionamide,
(10) N-methylol-3-(dimethylphosphono)propionamide,
(11) N-methylol-3-(diethylphosphono)propionamide,
(12) N-methylol-3-(diisopropylphosphono)propionamide,
(13) N-methylol-3-(diethylphosphono)-2-methyl-propionamide,
(14) (2-hydroxyethyl)-3-(dimethylphosphono)propionate,
(15) (2-hydroxyethyl)-3-(diisopropylphosphono)propionate,
(16) (2-hydroxyethyl)-3-(diethylphosphono)-2-methyl-propionate,
(17) glycidyl 3-(dimethylphosphono)propionate,
(18) glycidyl 3-(diethylphosphono)propionate, and
(19) glycidyl 3-(diethylphosphono)-2-methyl-propionate,

and (2) at least one material selected from the group consisting of silicon-containing inorganic compounds, magnesium-containing inorganic compounds, calcium-containing inorganic compounds, penetrants, film crack preventing agents, formaldehyde capturing agents, acid catalysts, antifoamers, mold releasing agents and other fire retardants.

11. A fire-retardant woody material obtained by treatment by the method of claim 1 or 2.

4,585,704

ELECTRICALLY CONDUCTIVE Si_3N_4—C SERIES AMORPHOUS MATERIAL AND A METHOD OF PROCESSING THE SAME

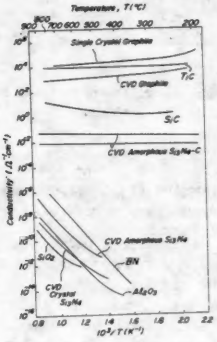
Toshio Hirai, 4-91, Takamori 3-chome, and Takashi Goto, 2-12-304, Kuromatsu 3-chome, both of Izumi City, Japan

Continuation of Ser. No. 428,274, Sep. 29, 1982, abandoned, which is a division of Ser. No. 170,168, Jul. 18, 1980, Pat. No. 4,393,097. This application Aug. 21, 1984, Ser. No. 642,700
Claims priority, application Japan, Jul. 24, 1979, 54-93942
Int. Cl.[4] B32B *9/00*
U.S. Cl. 428—446 **10 Claims**

10. A coated article comprising a substrate having coated thereon a massive and pure Si_3N_4—C series amorphous solid coating obtained directly on a surface of a heated substrate arranged in a reaction furnace, by a chemical vapor deposition process using a hydrogen source gas, in addition to a silicon source gas, a nitrogen source gas, and a carbon source gas in the reaction furnace, occurring under a reduced total pressure of about 30–70 mmHg, said coating comprises a deposited amorphous Si_3N_4 matrix and codeposited carbon uniformly distributed in said matrix, having an electrical conductivity σ of a formula

$$\sigma = \sigma_0 \exp(-K/2kT)$$

wherein σ_0 is an electrical conductivity at 0° K., E is a value of 0.02–0.06 eV, k is the Boltsmann constant and T is an absolute temperature, a carbon content of about 0.2–10% by weight, an electrical conductivity σ of about 10^{-3} to $10^{-1}\ \Omega^{-1}\ cm^{-1}$ at a temperature from ambient to about 900° C., a density of about 2.7 to 3.0 g/cm^3, a thermal conductivity of about 0.004–0.010 cal/cm sec K at ambient temperature, a specific heat of about 0.16 cal/g K at ambient temperature, a thermal diffusivity of about 0.010–0.022 cm^2/sec at ambient temperature, and a micro Vikers hardness of about 2,500–3,500 kg/mm^2 (100 g load) at ambient temperature said substrate being selected from the group consisting of graphite, silicon carbide, and silicon nitride.



4,585,705

HARD ORGANOPOLYSILOXANE RELEASE COATING

Dennis W. Broderick, Rhodes, and Harold L. Vincent, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Nov. 9, 1983, Ser. No. 550,168
Int. Cl.[4] B32B *9/04*
U.S. Cl. 428—447 **21 Claims**

12. An article comprising a solid substrate coated with a curable composition of matter comprising
(A) 100 parts by weight of a hydroxyfunctional polysiloxane resin copolymer containing $CH_3SiO_{3/2}$ units, $C_6H_5SiO_{3/2}$ units, $(C_6H_5)_2SiO$ units and $C_6H_5(CH_3)SiO$ units wherein there is present 0.5 to 5 weight percent hydroxy radicals attached to silicon atoms, the organic group to silicon ratio is from 0.8 to 1.4 and the C_6H_5— *to silicon ratio is from* 0.35 to 0.85;
(B) from 4 to 240 parts by weight, based on 100 parts of (A), of $CH_3SiO_{3/2}$;
(C) from 0.2 to 6 parts by weight, based on 100 parts of (A), of a fluid polysiloxane having the formula $(RR'R''Si)_2O[(CH_3)_2SiO]_x$, wherein x has a value of from 250 to 850, R is OH or CH_3— and R′ and R″ are CH_3—, wherein there is present in component (C), less than fifteen percent by weight of $(CH_3)_3SiO$ units,
(D) from 0.48 to 6 parts by weight, based on 100 parts of (A), of a curing agent.

4,585,706

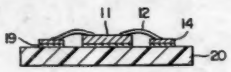
SINTERED ALUMINUM NITRIDE SEMI-CONDUCTOR DEVICE

Yukio Takeda; Satoru Ogihara; Mitsuru Ura; Kousuke Nakamura, all of Hitachi; Tadamichi Asai, Ibaraki; Tokio Ohkoshi, Hitachi; Yasuo Matsushita, Hitachi, and Kunihiro Maeda, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 373,150, Apr. 29, 1982, Pat. No. 4,540,673. This application Aug. 26, 1985, Ser. No. 769,302
Claims priority, application Japan, Apr. 30, 1981, 56-66376
Int. Cl.[4] H01L *29/12;* **B32B** *15/04*
U.S. Cl. 428—620 **11 Claims**

1. A semi-conductor device which comprises an insulating substrate of sintered aluminum nitride having a high thermal

conductivity, which comprises at least 65% by weight of aluminum nitride and at least one of beryllium, beryllium compound, lithium and lithium compound, and a semi-conductor element disposed on the substrate.



4,585,707

HIGH EXPANSION ALLOY FOR BIMETAL STRIP

Earl L. Frantz, Reading, Pa., assignor to Carpenter Technology Corporation, Reading, Pa.

Filed Apr. 29, 1983, Ser. No. 489,938
Int. Cl.[4] C22C 38/38
U.S. Cl. 428—619 **3 Claims**

1. An austenitic high expansion alloy which retains an austenite content of at least about 97% when significantly decarburized and cold worked to a reduction of at least about 80% in thickness, consisting essentially in weight percent of about:

	w/o
Manganese	5.81
Chromium	3.37
Nickel	18.60

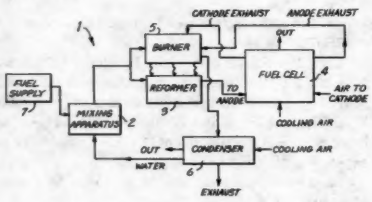
and the balance being essentially iron.

4,585,708

FUEL CELL SYSTEM WITH PREMIXING OF WATER MISCIBLE HYDROCARBON FUEL AND WATER

Sandors G. Abens, Rye, N.Y.; William Keil, Redding, and Mohammad Farooque, Huntington, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed Jun. 11, 1985, Ser. No. 743,433
Int. Cl.[4] H01M 8/04
U.S. Cl. 429—17 **13 Claims**



1. A fuel cell system comprising:

a fuel cell including an anode for receiving fuel gas and a cathode for receiving oxidant gas;

a reformer for receiving a mixture of water and water miscible hydrocarbon fuel for producing said fuel gas from said mixture;

a holding tank for holding a supply of said mixture, said holding tank having an inlet section and an outlet;

first means coupled to said outlet for delivering said mixture from said holding tank to said reformer;

a mixing tank for receiving a water miscible hydrocarbon fuel from a water miscible hydrocarbon fuel supply and for receiving water from a water supply in predetermined volumetric amounts to produce said mixture;

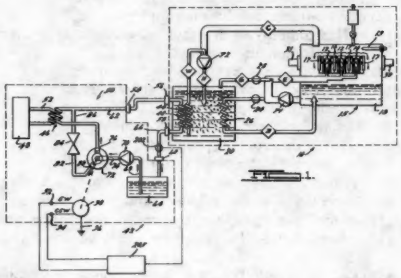
and second means for conveying said mixture in said mixing tank to said inlet section of said holding tank.

4,585,709

METHOD AND APPARATUS FOR REGULATING THE HYDRATE FORMATION TEMPERATURE IN A METAL-HALOGEN BATTERY

Dane D. Barlow, Bloomfield Hills, Mich., assignor to Energy Development Associates, Inc., Greensboro, N.C.

Filed Jan. 21, 1983, Ser. No. 459,713
Int. Cl.[4] H01M 8/04
U.S. Cl. 429—19 **27 Claims**



1. A method of controlling the temperature within a metal-halogen battery having a supply of hydrate forming solution; a first coolant circuit for exchanging heat with said solution and means for removing heat from said first coolant circuit including refrigeration means, second coolant circuit for transferring heat to said refrigeration means and proportional mixing valve means for coupling said first and second coolant circuits comprising,

determining the temperature of said solution;

determining a set point temperature in accordance with measurements indicative of the hydrate concentration of said solution;

comparing the temperature of said solution with said set point temperature to produce an error value having magnitude and sign;

producing electrical impulses at time intervals varying in accordance with the magnitude of said error value; and

controlling said proportional mixing value means in accordance with said electrical impulses and the sign of said error value, thereby controlling the degree of coupling between said first and second coolant circuits.

4,585,710

ZINC/AIR CELL CATHODE

John J. McEvoy, Eagan, Minn., assignor to Duracell Inc., Bethel, Conn.

Filed Apr. 22, 1985, Ser. No. 726,443
Int. Cl.[4] H01M 12/06
U.S. Cl. 429—27 **17 Claims**

1. A metal/air depolarized cell comprising a metal anode, a hydrophobic catalytic cathode and a separator therebetween and a fluid alkaline electrolyte characterized in that said separator is adheringly laminated to said cathode by means of a material capable of absorbing said electrolyte which is integrated with the surface of said cathode adjacent said separator.

4,585,711

HYDROGEN ELECTRODE FOR A FUEL CELL

Hariharan Vaidyanathan, Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Dec. 15, 1983, Ser. No. 561,509
Int. Cl.[4] H01M 4/86
U.S. Cl. 429—42 **16 Claims**

1. An electrode, comprising:

a perforated conductive foil for collecting current;

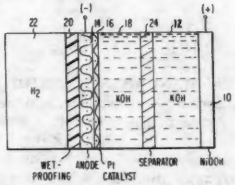
a semi-permeable layer of polytetrafluoroethylene (PTFE) bonded to one side of said foil for wet-proofing said one

side and having an average volume pore diameter of 0.1–0.3 μm; and

an electrocatalytic layer bonded to the other side of said foil comprising granules of carbon coated with platinum dispersed in a matrix of filamentary PTFE.

8. A process for fabricating an electrode, comprising the steps of:

blending a mixture of granular polytetrafluoroethylene (PTFE), granular carbon coated with platinum, a bulking agent and a lubricant;



rolling said blended mixture to a thin layer;

drying said layer for removing said bulking agent and lubricant, and for reducing the thickness of said layer;

bonding said dried layer to one side of a conductive grid, said grid acting as a current collector and said bonded dried layer acting as an electrocatalytic layer;

bonding a microporous layer of PTFE to the other side of said conductive grid, said microporous layer acting as a wet-proofing layer; and

sintering said bonded dried layer.

4,585,712

BATTERY COMPRISING HIGH TEMPERATURE RECHARGEABLE ELECTROCHEMICAL CELLS AND SUPPORT MEANS

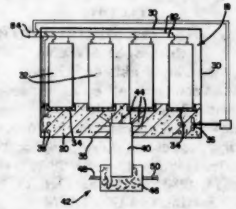
Roger J. Wedlake, Johannesburg, South Africa, assignor to Lilliwyte Societe Anonyme, Luxembourg

Filed Jan. 17, 1985, Ser. No. 692,233

Claims priority, application South Africa, Jan. 20, 1984, 84/0462; May 28, 1984, 84/4042

Int. Cl.⁴ H01M *10/50*

U.S. Cl. 429—50 **4 Claims**



1. A battery comprising a plurality of interconnected high-temperature rechargeable electrochemical cells and support means on which the cells rest for supporting and carrying the cells, the support means including heating means for heating the cells from below and the support means comprising a plinth on which the cells rest, the plinth being hollow to permit circulation of heating gases in the interior of the plinth, the heating means comprising a catalyst for the flameless catalytic combustion of a hydrocarbon fuel and the battery including a heat pipe projecting from the exterior of the plinth into the interior thereof, the heat pipe leading from the plinth to a catalytic converter containing said catalyst for the flameless catalytic combustion of a hydrocarbon fuel, and the plinth having a fan in its interior for circulating heated air in the interior of the plinth.

4,585,713

ELECTRICAL DEVICE COMPRISING AT LEAST ONE THERMAL BATTERY AND ITS APPLICATION TO A MODULABLE POWER GENERATOR

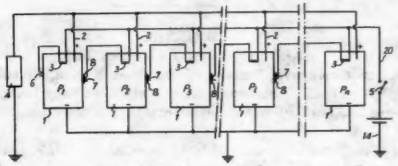
Claude Pathé, Chatillon; Jean Darmois, Bourg-La-Reine, and Claude Nëe, Antony, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Nov. 14, 1984, Ser. No. 671,440

Claims priority, application France, Nov. 16, 1983, 83 18206

Int. Cl.⁴ H01M *6/36*

U.S. Cl. 429—112 **6 Claims**



1. An electrical device for delivering power to a pair of output terminals, comprising:

a normally inactivated thermal battery;

a normally deenergized activating means which will cause said thermal battery to deliver power to said output terminals when energized;

a means for energizing said activating means;

an electrical circuit to be controlled in relationship with the power delivered by said thermal battery to said output terminals; and

a thermal switch electrically disposed in said electrical circuit and in thermal connection with said thermal battery, said thermal switch being able to switch when the temperature of said thermal battery reaches a predetermined value.

4,585,714

QUATERNARY VITREOUS SOLID LITHIUM CATION CONDUCTIVE ELECTROLYTE

James R. Akridge, Parma, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 28, 1985, Ser. No. 749,780

Int. Cl.⁴ H01M *6/18*

U.S. Cl. 429—193 **16 Claims**

1. A quaternary solid state electrolyte having a vitreous lithium cation conductor of the composition:

$$aX, bLi_2S, Y, Z$$

where

X is selected from the group consisting of P_2S_5 and SiS_2;

a is from about 0.5 to about 2;

b is from 0.25 to 2;

Y is an oxygen-containing lithium compound selected from the group consisting of Li_4SiO_4, Li_2CO_3 and Li_2SiO_3;

Z is a dopant selected from the group consisting of LiI, LiBr, LiCl and LiF; and wherein said composition has a conductivity of at least 0.75×10^{-4} ohm^{-1} cm^{-1} at 25° C.

4,585,715

METAL CATHODE COLLECTOR HAVING A PROTECTIVE SURFACE LAYER OF A METAL OXIDE

Jack W. Marple, Elyria, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1984, Ser. No. 626,107
Int. Cl.[4] H01M *6/14, 4/02*
U.S. Cl. 429—194 7 Claims

1. In an electrochemical cell comprising an active anode, an active cathode material used in conjunction with a metal cathode collector, and an ionically conductive electrolyte solution containing a solute dissolved in a solvent; the improvement wherein the metal cathode collector is selected from the group consisting of stainless steel and nickel and has a surface layer of at least 500 Å thick of an oxide of a metal of said metal cathode collector and wherein said metal cathode collector having the protective surface layer exhibits a lower resistance in the electrochemical cell than would a similar metal cathode collector not having the protective surface layer.

4,585,716

CELL CORROSION REDUCTION

Purush Chalilpoyil, Lincoln, Mass.; Jesse R. Rea, Greenburgh, N.Y.; Frank E. Parsen, Weston, and Chib-Chung Wang, Lexington, both of Mass., assignors to Duracell Inc., Bethel, Conn.

Continuation-in-part of Ser. No. 629,011, Jul. 9, 1984, abandoned. This application Aug. 12, 1985, Ser. No. 764,454
Int. Cl.[4] H01M *4/08, 4/26, 4/42*
U.S. Cl. 429—206 34 Claims

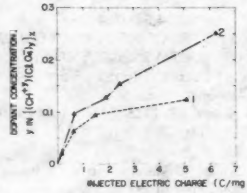
1. An electrochemical cell comprising an anode, a cathode and an aqueous electrolyte characterized in that said anode is comprised of particles of discrete single crystals of anode metal and one or more members of the group consisting of indium, cadmium, gallium, thallium, bismuth, tin and lead, wherein said one or more members are present in said anode in a range of 25–5000 ppm.

4,585,717

ORGANIC BATTERY

Atsushi Watanabe, Toyokawa, and Hiromochi Muramatsu, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 513,395, Sep. 12, 1983, abandoned. This application Mar. 28, 1985, Ser. No. 716,613
Claims priority, application Japan, Sep. 14, 1982, 57-158921
Int. Cl.[4] H01M *4/60*
U.S. Cl. 429—213 3 Claims



1. An organic polymer battery having an improved charging/discharging efficiency, said battery comprising:

a cathode and an anode as electrodes, at least one of which has as the electrode active material an electroconductive macromolecular film having fibers distributed throughout, the fibers on the film's surfaces being denser than in the inside of the film;

a separator positioned between said anode and said cathode;

an organic electrolyte containing a dopant in a polar nonprotic organic solvent; and

a vessel containing said electrodes and said electrolyte and adapted to maintain same under reduced pressure in an inert atmosphere,

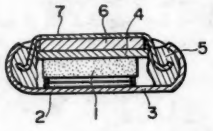
said electroconductive macromolecular film having a plurality of cuts or through-holes to increase an inside section to facilitate passage of said dopant through said inside section where there are fewer fibers than on the surface portion of the film.

4,585,718

LITHIUM-MANGANESE DIOXIDE CELL

Satoru Uedaira; Yoriko Sameshima, and Hidemasa Tamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,677
Claims priority, application Japan, Mar. 6, 1984, 59-41406
Int. Cl.[4] H01M *4/50*
U.S. Cl. 429—224 13 Claims



1. Manganese dioxide having an X-ray diffraction peak at a diffraction angle 2θ of about 31.2° when analyzed after discharging in a lithium-manganese dioxide cell to a potential of 1.4 volts comprising a cathode composed of said manganese dioxide, an anode composed of metal lithium and an electrolyte interposed therebetween.

4,585,719

PHOTOCONDUCTIVE MEMBER COMPRISING (SI-GE)-SI AND N

Keishi Saitoh, Ibaraki; Yukihiko Ohnuki, Kawasaki, and Shigeru Ohno, Yohohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,511
Claims priority, application Japan, Sep. 5, 1983, 58-162726; Sep. 6, 1983, 58-163434; Sep. 12, 1983, 58-167747; Sep. 14, 1983, 58-169925; Oct. 14, 1983, 58-191986; Oct. 21, 1983, 58-197332
Int. Cl.[4] G03G *5/14*
U.S. Cl. 430—59 84 Claims

1. A photoconductive member which comprises a support for a photoconductive member and a light receiving layer overlying the support comprising a first layer region (G) comprising an amorphous material containing silicon atoms and germanium atoms and at least one of hydrogen atoms and halogen atoms and a second layer region (S) exhibiting photoconductivity comprising an amorphous material containing silicon atoms and at least one of hydrogen atoms and halogen atoms, the first layer region (G) and the second layer region (S) being provided in this order from the support side, and the distribution of germanium atoms in the first layer region (G) being not uniform in the layer thickness direction, and nitrogen atoms being contained in the light receiving layer.

4,585,720

PHOTOCONDUCTIVE MEMBER HAVING LIGHT RECEIVING LAYER OF A-(SI-GE) AND C

Keishi Saitoh, Ibaraki; Yukihiko Ohnuki, Kawasaki, and Shigeru Ohno, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 649,713

Claims priority, application Japan, Sep. 14, 1983, 58-170013; Sep. 21, 1983, 58-174643; Dec. 28, 1983, 58-245309; Dec. 28, 1983, 58-245313; Dec. 29, 1983, 58-247254; Dec. 29, 1983, 58-247258

Int. Cl.[4] G03G 5/085

U.S. Cl. 430—57 97 Claims

1. A photoconductive member which comprises a substrate for a photoconductive member and a light receiving layer comprising an amorphous material comprising silicon atoms and germanium atoms wherein the content of germanium atoms in the light receiving layer is 1 to 9.5×10^5 atomic ppm based on the sum of germanium atoms and silicon atoms, and exhibiting photoconductivity, the light receiving layer containing at least one of hydrogen atoms and halogen atoms and having a layer region (C) containing carbon atoms, and the layer region (C) having a region (X) where the distribution concentration line C(C) in the direction of layer thickness of carbon atoms increases continuously toward the upper surface of the light receiving layer.

4,585,721

PHOTOCONDUCTIVE MEMBER COMPRISING AMORPHOUS GERMANIUM, AMORPHOUS SILICON AND NITROGEN

Keishi Saitoh, Ibaraki; Yukihiko Ohnuki, Kawasaki, and Shigeru Ohno, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1984, Ser. No. 646,425

Claims priority, application Japan, Sep. 5, 1983, 58-162725; Sep. 6, 1983, 58-163433; Sep. 12, 1983, 58-167746; Sep. 12, 1983, 58-167750; Oct. 14, 1983, 58-191985; Oct. 21, 1983, 58-197331

Int. Cl.[4] G03G 5/08

U.S. Cl. 430—84 69 Claims

1. A photoconductive member comprising a substrate for photoconductive member and a light receiving layer provided on said substrate having a layer constitution in which a first layer region (G) comprising an amorphous material containing germanium atoms and at least one of hydrogen atoms and halogen atoms, and a second layer region (S) exhibiting photoconductivity comprising an amorphous material containing silicon atoms and at least one of hydrogen atoms and halogen atoms, are successively provided from the substrate side, said light receiving layer containing nitrogen atoms.

4,585,722

OPTICAL RECORDING MEDIA WITH THERMAL COLORATION AND PROCESS FOR PRODUCING SAME

Akira Morinaka, Mito; Shigeru Oikawa, Katsuta, and Hirotsugu Sato, Mito, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 499,403, May 31, 1983, abandoned. This application Feb. 20, 1985, Ser. No. 703,453

Claims priority, application Japan, May 31, 1982, 57-92634; Jun. 30, 1982, 57-111549; Sep. 6, 1982, 57-153861

Int. Cl.[4] G03C 5/54, 1/733; B41L 1/20

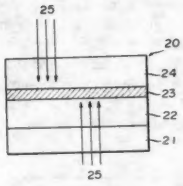
U.S. Cl. 430—201 5 Claims

1. An optical recording medium with thermal coloration capable of monochromatic or multi-colored coloration which optical recording medium comprises:

a substrate capable of transmitting visible and near infrared light,

a first coloring agent layer consisting of a transparent leuco-dye, said first coloring agent layer formed by vacuum deposition on said substrate, wherein said lueco-dye is selected from the group consisting of 3,3-bis (p-dimethylamino phenyl)-6-dimethylaminophthalide, 3,3-bis (p-dimethylamino phenyl) phthalide, 3-chloro-6-cyclohexylamino fluoran, 3-diphenylamino 8-diethylamino fluoran, 3-chlorophenyl-methlyamino 8-diethylamino fluoran, and 3-methyl 3-phenylamino 8-diethylamino fluoran,

a first light absorber layer formed by vacuum depostion on said first coloring agent layer and capable of absorbing a first wavelength light from a recording light source, wherein said first light absorber layer consists of a compound selected from the group consisting of copper phthalocyanine, fluorescein, vanadyl phthalocyanine, aluminum phthalocyanine, bis-(cis-1,2 toluyl) ethylene 1,2 dithiolate nickel, bis-(1-chloro 3,4-dithiophenolate) nickel, bis-(4-dimethylamino 1,2 dithiophenolate) nickel, N-dimethylaminonaphthal squarrium, and N-diethylamino-naphthol squarrium, and



a first developer layer consisting of a transparent solid acid, said first developer layer formed by vacuum deposition on said first light absorber layer, whereby said first light absorber layer is interposed between said first coloring agent layer and said first developer layer, wherein said solid acid is selected from the group consisting of phenolphthalein, thymolphthalein, alizarin, morin, quercetin, 2,2 bis (4-hydroxyphenyl) propane, a mixture of 2,2 bis (4-hydroxyphenyl) propane and stearic acid amide having the ratio of 1:1 by weight, a 4 hydroxy phenoxide and a mixture of 4-hydroxy phenoxide and methylol amide having the ratio of 1:2 by weight.

4,585,723

DEVELOPER FOR ELECTROSTATIC LATENT IMAGE AND METHOD OF FORMING IMAGE

Ken-ichi Kishi, Sagamihara; Keiji Sato; Takahira Kasuya, both of Hachioji; Kunio Ito, Tama, and Tsuneo Wada, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 461,879, Jan. 28, 1983, abandoned. This application Aug. 19, 1985, Ser. No. 767,056

Claims priority, application Japan, Feb. 3, 1982, 57-14731; May 25, 1982, 57-87222

Int. Cl.[4] G03G 9/08, 9/10, 9/14

U.S. Cl. 430—106 29 Claims

1. A developer for an electrostatic latent image comprising colored electroscopic particles and a first silicon dioxide powder wherein a silicon atom, having at least one organic group (A), is chemically bonded to a silicon atom on the surface of an individual silicon dioxide particle through an oxygen atom, said (A) being selected from the group consisting of a first saturated or unsaturated aliphatic organic group having at least 5 carbon atoms, and said first silicon dioxide powder is present in an amount of from 0.01 to 15% by weight based on said colored electroscopic particles.

4,585,724

IMAGE RECEPTOR LAYER COMPRISING POLYVINYL IMIDAZOLE AND CATIONIC POLYMER

Günter Helling, Odenthal, and Manfred Peters, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 14, 1984, Ser. No. 671,219

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1983, 3342629; Jul. 6, 1984, 3424899

Int. Cl.[4] G03C *1/40, 5/54*

U.S. Cl. 430—213 3 Claims

1. A photographic element for the dye diffusion image transfer process comprising at least one supported image receptor layer, consisting essentially of a mordant for diffusible anionic dyes, wherein the mordant is a mixture of from 5 to 70%, by weight, of a polymer containing cationic groups and obtained by homo or co-polymerisation of ethylenically unsaturated monomers, and from 30 to 95%, by weight, of a second polymer, which is free from cationic groups and has been obtained by homo- or statistical co-polymerisation of N-vinyl imidazole or 2-methyl-1-vinyl imidazole or of a mixture of N-vinyl imidazole or 2-methyl-1-vinyl imidazole and a co-polymerisable monomer.

4,585,725

PHOTOGRAPHIC IMAGE-RECEIVING ELEMENT FOR SILVER SALT DIFFUSION TRANSFER PROCESS

Shinji Sakaguchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 15, 1984, Ser. No. 641,102

Claims priority, application Japan, Aug. 15, 1983, 58-148979

Int. Cl.[4] G03C *5/54*

U.S. Cl. 430—232 31 Claims

1. An image-receiving element for a silver salt diffusion transfer process, said element having at least one hydrophilic polymer layer between a layer of a first hydrolyzable alkali-impermeable polymer and an alkali-permeable image-receiving layer which is obtained by hydrolysis of at least a part of the layer of a second alkali-impermeable polymer and which contains silver depositing nuclei, said first layer containing at least one diffusible organic solvent-soluble compound for modifying the photographic properties of a silver transfer image to be formed in the alkali-permeable polymer layer by photographic processing, said organic solvent-soluble compound becoming diffusible by the action of alkali in a developer permeated thereto after development.

4,585,726

PHOTOPOLYMERIZABLE WATER-SOLUBLE OR WATER-DISPERSIBLE MIXTURE CONTAINING A SALT OF NITROUS ACID

Günter Wallbillich, Schifferstadt, and Rudolf Vyvial, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 6, 1984, Ser. No. 628,318

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1983, 3324643

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—281 5 Claims

1. A photopolymerizable water-soluble or water-dispersible mixture which consists essentially of a polymer, at least one low molecular weight photopolymerizable unsaturated compound containing one or more acrylyl or methacrylyl groups, at least one compound selected from the group consisting of photoinitiators and photosensitizers, and as a thermal polymerization inhibitor, from 0.001 to 1% by weight, based on the amount of anhydrous photopolymerizable mixture, of a water-soluble salt of nitrous acid.

4,585,727

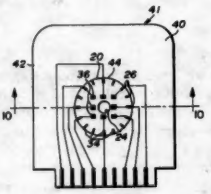
FIXED POINT METHOD AND APPARATUS FOR PROBING SEMICONDUCTOR DEVICES

Donald J. Reams, Santa Clara, Calif., assignor to Probe-Tronics, Inc., Santa Clara, Calif.

Filed Jul. 27, 1984, Ser. No. 635,110

Int. Cl.[4] G03C *5/00;* G01R *1/04*

U.S. Cl. 430—312 14 Claims



1. A method of making a fixed point probe ring for use in testing a semiconductor device having a plurality of electrical contacts, the steps comprising:

providing a rigid substrate of insulating material having sides and a face, and an edge region joining the sides and face;

coating the substrate with an electrically conductive material;

forming a plurality of traces on said sides and said edge region of the substrate by a photoresist exposure, development and etching process;

forming pads on said face of the substrate by a photoresist exposure and development process, the pads are formed in a pattern to electrically connect with the contacts of the semiconductor device;

forming lines of electrical connection between the traces and the pads by a photoresist exposure and development process; and

layering the pads with electrically conductive material to provide clearance between the substrate and the semiconductor device, whereby when the contacts of the semiconductor device are brought into electrical connection with the pads of the probe ring the semiconductor device can be tested for electrical integrity.

4,585,728

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Furutachi, and Takeshi Hirose, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

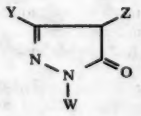
Continuation-in-part of Ser. No. 620,238, Jun. 13, 1984, abandoned. This application Jun. 7, 1985, Ser. No. 742,489

Claims priority, application Japan, Jun. 13, 1983, 58-105501

Int. Cl.[4] G03C *7/40*

U.S. Cl. 430—372 21 Claims

16. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer, the color photographic light-sensitive material having at least one layer containing at least one 2-equivalent magenta coupler represented by formula (I):



(I)

wherein W represents a phenyl group substituted with at least one halogen atom, alkyl group, alkoxy group, alkoxycarbonyl

group, or cyano group; Y represents an acylamino group or an anilino group; and Z represents a group capable of being released upon coupling, and at least one kind of amine compound having at least two groups other than a hydrogen atom represented by formula (II):

(II)

wherein X, R_1 and R_2, which may be the same or different, each represents an unsubstituted alkyl group or an alkyl group substituted with a halogen atom, an aryl group, a heterocyclic group, a cyano group, an alkoxy group, an aryloxy group, an acylamino group, an imido group, an anilino group, an alkylamino group, a heterocyclic amino group, a ureido group, a sulfamoylamino group, an arylthio group, a heterocyclic thio group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, a sulfonyl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a phosphonyl group, an imino group, a cyanothio group, an acyloxy group, a carbamoyloxy group, a silyloxy group, a sulfonyloxy group, a heterocyclic oxy group, a hydroxy group or a nitro group; or one of R_1 and R_2 is a hydrogen atom; or R_1 and R_2 and a nitrogen atom together form a heterocyclic ring, with the proviso that where the heterocyclic ring is a 6-membered saturated ring, said ring has three or less alkyl groups; and the total number of carbon atoms included in R_1, R_2, and X is not less than 10.

4,585,729

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Tadao Sugimoto, and Sumito Yamada, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 447,827, Dec. 8, 1982, abandoned. This application Jan. 30, 1985, Ser. No. 696,861

Claims priority, application Japan, Jan. 27, 1982, 57-11175

Int. Cl.[4] G03C *1/02, 5/16*

U.S. Cl. 430—502 **20 Claims**

1. A silver halide photographic light-sensitive material, comprising:

a transparent support having provided on one side thereof;

at least two silver halide emulsion layers; and

a surface-protecting layer, wherein one of the two silver halide emulsion layers is a tabular silver halide emulsion layer containing tabular silver halide grains having a diameter at least 5 times the thickness of the grain,

the other of the two silver halide emulsion layers is a non-tabular silver halide emulsion layer containing non-tabular silver halide grains,

the tabular silver halide emulsion layer being positioned closer to the support than the non-tabular silver halide emulsion layer, and

the non-tabular silver halide emulsion layer being positioned closer to the support than the surface-protecting layer;

an additional tabular silver halide emulsion layer;

an additional non-tabular silver halide emulsion layer; and

an additional surface-protecting layer, wherein the additional tabular silver halide emulsion layer, the additional non-tabular silver halide emulsion layer and the additional surface-protecting layer are provided on the opposite side of the support from the tabular silver halide emulsion layer, non-tabular silver halide emulsion layer and surface-protecting layer,

the additional tabular silver halide emulsion layer being positioned closer to the support than the additional non-tabular silver halide emulsion layer, and

the additional non-tabular silver halide emulsion layer being positioned closer to the support than the additional surface-protecting layer, wherein both upper non-tabular silver halide emulsion layers are more sensitive by 0 to 0.6 in terms of Δ log E then the sensitivity of the tabular silver halide emulsion layers.

4,585,730

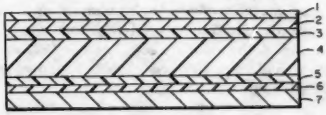
ANTISTATIC BACKING LAYER WITH AUXILIARY LAYER FOR A SILVER HALIDE ELEMENT

Thomas B. Cho, East Brunswick, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1985, Ser. No. 697,378

Int. Cl.[4] G03C *1/82*

U.S. Cl. 430—527 **8 Claims**



1. A photographic film comprising a support, a silver halide emulsion layer on one side of said support, and an antistatic layer on the opposite side of said support, characterized in that the antistatic layer is coated with an auxiliary layer consisting essentially of a gelatin binder containing a conductive polymer in a concentration range of 0.3 to 10% by weight of the gelatin binder taken from the group consisting of poly(sodium styrene sulfonate), poly(cellulose sulfate), poly(dimethyl diallyl ammonium chloride), poly(sodium styrene sulfonate-maleic acid); poly(sodium styrene butyl methacrylate-butylacrylate-methacrylic acid) and poly(styrene sulfonic acid ammonium salt), coated on said antistatic layer at a pH of 5–8, whereby the antistatic properties of the antistatic layer are conducted through said auxiliary layer.

4,585,731

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hidetoshi Kobayashi, and Keiji Mihayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 10, 1984, Ser. No. 639,294

Claims priority, application Japan, Aug. 10, 1983, 58-146097

Int. Cl.[4] G03C *7/26*

U.S. Cl. 430—543 **18 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, wherein at least one silver halide emulsion layer contains a coupler which, when subjected to a coupling reaction with an oxidation product of a color developing agent, produces a diffusible coupling product which exerts a fogging effect in a developing solution, said coupler being represented by formula (I)

(I)

wherein COUP represents a coupler residue capable of being subjected to a coupling reaction with an oxidation product of an aromatic primary amine developing agent; BALL represents a ballast bonded to the coupling position of COUP and releasable from COUP upon reaction between COUP and an oxidation product of an aromatic primary amine developing agent; and FOG represents a group which manifests a fogging effect in a developing solution after BALL is released upon the reaction between COUP and an oxidation product of an aromatic primary amine developing agent.

4,585,732

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshio Kawagishi, and Nobuo Furutachi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1984, Ser. No. 686,955
Claims priority, application Japan, Dec. 27, 1983, 58-250345
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.[4] G03C *7/26*
U.S. Cl. 430—558 28 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer, the photographic light-sensitive material containing a color image forming coupler comprising a nitrogen containing heterocyclic 5-membered ring-condensed-5-membered ring in which the coupling active position is substituted with the nitrogen atom of a carboxylic acid amido group containing at least one fluorine atom.

4,585,733

METHOD OF PREPARING SILVER HALIDE PHOTOGRAPHIC EMULSION

Atsuo Ezaki; Morio Enomoto; Takehisa Kishita, and Kazuo Takahashi, all of Hino, Japan, assignors to Konishiroku Photo Ind. Co., Ltd., Tokyo, Japan

Filed May 4, 1984, Ser. No. 607,172
Claims priority, application Japan, May 18, 1983, 58-88220
Int. Cl.[4] G03C *1/36*
U.S. Cl. 430—569 20 Claims

1. A method of preparing a silver halide photographic emulsion comprising silver chloride as a principal component, which comprises adding to an aqueous solution of a hydrophilic colloid, an aqueous solution of a water-soluble silver salt and an aqueous solution of a water-soluble halide according to a simultaneous mixing method, maintaining the rate of addition of the aqueous solution of a water-soluble silver salt and that of the aqueous solution of a water-soluble halide at a level not higher than the critical growth rate of silver halide grains and, at the same time, setting and maintaining the EAg value during the addition of the aqueous solution of a water-soluble silver salt and the aqueous solution of a water-soluble halide to a level not lower than 130 mV and not higher than 160 mV and physical ripening of the emulsion, said silver halide photographic emulsion being prepared in the presence of a water-soluble rhodium salt which is added during the course of emulsification and physical ripening of the emulsion.

4,585,734

PHOTOTHERMOGRAPHIC TONERS

David C. Weigel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 1, 1985, Ser. No. 697,342
Int. Cl.[4] G03C *1/02*
U.S. Cl. 430—619 20 Claims

1. In a photosensitive, heat-developable, dry silver sheet material containing an image-forming system including a preformed photosensitive silver halide catalyst-forming means and, as heat sensitive image forming means, an organic silver compound and a reducing agent therefor, the oxidation reduction reaction of which to produce a visible image is accelerated by said catalyst, and sufficient toner to increase the density of said visible image, the improvement characterized by said toner being a mixture of (a) phthalazine and (b) at least one active hydrogen containing heterocyclic compound comprising a 5-, 6-, or 7-membered heterocyclic ring having only C, N, S, O, and Se ring atoms.

4,585,735

PROLONGED STORAGE OF RED BLOOD CELLS

Harold T. Meryman, Sandy Spring, Md.; Marne Hornblower, Washington, D.C., and Ralph Syring, Silver Spring, Md., assignors to American National Red Cross, Washington, D.C.

Filed Jul. 19, 1984, Ser. No. 632,242
Int. Cl.[4] A01N *1/02;* A61K *35/18*
U.S. Cl. 435—2 10 Claims

1. A suspension medium for prolonged storage of red blood cells at about 4° C. consisting essentially of an aqueous solution containing about 80–150 mM glucose, 30–80 mM mannitol, 6–90 mM potassium citrate, 1–5 mM adenine and 40–95 mM of a phosphate salt, said solution having an osmolarity of about 180–220 milli-osmolar and having 10–200 mM of a penetrating salt, the pH of said solution being about 6.8 to 7.2 wherein said red blood cells can be viably stored.

4,585,736

FLOW CYTOMETRIC MEASUREMENT OF TOTAL DNA AND INCORPORATED HALODEOXYURIDINE

Frank A. Dolbeare, and Joe W. Gray, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 18, 1983, Ser. No. 542,955
Int. Cl.[4] C12Q *1/68;* G01N *33/53, 33/48*
U.S. Cl. 435—6 23 Claims

1. A method for the simultaneous measurement of total cellular DNA content and of incorporated halodeoxyuridine comprising:

reacting cells with radioactive labeled halodeoxyuridine;

denaturing cellular DNA with a denaturing agent;

adding to the reaction medium monoclonal antibodies reactive with halodeoxyuridine;

reacting the bound monoclonal antibodies with a labeled second antibody;

incubating the mixture with a DNA stain; and

measuring simultaneously the intensity of the DNA stain as a measure of the total cellular DNA and the halodeoxyuridine incorporated as a measure of DNA synthesis.

4,585,737

PREPARATION OF OXYGENATED AMBROXIDES

Adrian G. Barnes, and Peter C. Bevan, both of Southampton, England, assignors to British-American Tobacco Company Limited, London, England

Filed Oct. 29, 1984, Ser. No. 665,763
Claims priority, application United Kingdom, Nov. 3, 1983, 8329412
Int. Cl.[4] C12P *17/04*
U.S. Cl. 435—126 4 Claims

1. A method for the preparation of an oxygenated ambroxide selected from the group consisting of 3-keto-ambroxide, 3-β-hydroxy-ambroxide and 3-α-hydroxyambroxide, which comprises; the biotransformation of ambroxide with a microbial culture selected from the group consisting of ambroxide oxygenating fungi and ambroxide oxygenating Streptomyces.

4,585,738

IMMOBILIZED ENZYME SYSTEMS

John F. Roland, Glenview, Ill., assignor to Kraft, Inc., Glenview, Ill.

Filed Sep. 2, 1983, Ser. No. 529,019
Int. Cl.[4] C12N *11/14, 11/02, 11/12, 11/08*
U.S. Cl. 435—176 10 Claims

1. A method for preparing an immobilized enzyme composition comprising the steps of providing an enzyme composition to be immobilized, providing a suitable insoluble immobilization support for the enzyme, and combining said enzyme and said support with an edible water soluble tea polyphenol immobilization agent selected from the group consisting of green tea extract of *Camellia sinensis,* black tea extract of *Camellia sinensis,* (−) epi-gallocatechin gallate, (−) epi-catechingallate,

(−) epi-gallocatechin, (−) epi-catechin, theogallin, *Camellia sinensis* tea flavanols, *Camellia sinensis* bisflavanols, *Camellia sinensis* tea flavanol oxidation pclymers and mixtures thereof to form an immobilized enzymatically active composition comprising an adduct of said enzyme, said support and said tea polyphenol immobilization agent.

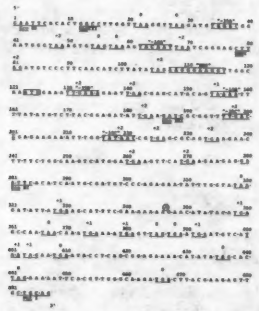
9. A method for enzymatically processing of food products comprising the steps of providing an aqueous fluid dispersion of the food product to be processed which contains a reactant subject to enzymatic treatment, providing an insolubized enzyme composition comprising an insoluble support and an adduct of an edible water soluble tea polyphenol with an enyzme which is interactive with said reactant, contacting said aqueous dispersion of the food product with said insolubilized enzyme composition to enzymatically modify the food product, and separating the modified food product from the insolubilized enzyme composition.

4,585,739

PLASMID FOR FOREIGN GENE EXPRESSION IN *B. SUBTILIS*

Paul S. Lovett, Columbia, Md., and Ronald G. Schoner, Zionsville, Ind., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 7, 1983, Ser. No. 472,641
Int. Cl.[4] C12N *1/20, 1/00, 15/00*
U.S. Cl. 435—253 **11 Claims**



1. A plasmid useful for introducing into *B. subtilis* foreign DNA, the nucleic acid sequence of which codes for production of a desired product, said plasmid being characterized as follows:

(a) it is comprised of (1) a double-stranded DNA segment of *B. pumilus* strain NCIB8600 containing a chloramphenicol acetyltransferase gene plus an EcoRI* promoter fragment cloned from phage SPO2 DNA and (2) a portion of a *B. subtilis* plasmid pUB110; and

(b) it has a mutation in its EcoRI to PstI fragment downstream from the promoter fragment whereby the nucleotide sequence for this EcoRI to PstI fragment is that shown in FIG. 1 of the drawing.

4,585,740

PROLACTIN IMMUNOASSAY USING SYNTHETIC PEPTIDE

Willard P. VanderLaan, La Jolla, Calif., assignor to The Whittier Institute for Diabetes and Endocrinology, La Jolla, Calif.

Filed May 3, 1983, Ser. No. 491,059
Int. Cl.[4] G01N *33/54, 33/56;* **A61K** *37/02*
U.S. Cl. 436—537 **17 Claims**

7. A quantitative immunoassay for determining the level of human prolactin in a biological sample comprising

providing a synthetic peptide that includes a segment having the formula

Leu-Pro-Ile-Cys-Pro-Gly-Gly-Ala-Ala-Arg-Cys-Gln-X

of said segment which reacts with an antibody that specifically binds to human prolactin, wherein X is Tyr or des-Tyr,

providing an antiserum containing antibodies having binding sites which specifically bind with said peptide segment and with human prolactin,

exposing the sample and said synthetic peptide to the antiserum in a manner such that said peptide and human prolactin in the sample compete for said binding sites,

binding measuring the proportion of peptide bound to said sites, and

determining the amount of human prolactin in the sample from the proportion of bound peptide.

14. A synthetic peptide which can be used as an antigen that induces the production of antibodies specific to human prolactin, which peptide includes the sequence having the formula:

Leu-Pro-Ile-Cys-Pro-Gly-Gly-Ala-Ala-Arg-Cys-Gln-X

wherein X is selected from the group consisting of Tyr and des-Tyr or a fragment of said sequence which as a part of said synthetic peptide induces the production of antibody which specifically binds to human prolactin.

4,585,741

METHOD OF ASSAY FOR VITAMIN D METABOLITES

Brian L. Clevinger, 40 N. Kingshighway, St. Louis, Mo. 63108; John G. Haddad, 202 St. Georges Rd., Ardmore, Pa. 19003, and Steven L. Teitelbaum, 536 Overhill Dr., St. Louis, Mo. 63130

Filed Aug. 25, 1983, Ser. No. 526,242
Int. Cl.[4] G01N *33/536, 33/82, 33/53, 33/531*
U.S. Cl. 436—542 **4 Claims**

1. The method of determining the level of calcitriol in a blood serum sample comprising subjecting said blood serum sample to competitive protein binding radioimmunoassay by incubating with radiolabeled calcitriol and monoclonal antibodies, whereby said radiolabeled calcitriol competes physicochemically with nonlabeled calcitriol in said blood serum sample for binding sites on said monoclonal antibodies, and in which said monoclonal antibodies are produced by immunization with calcitroic acid as the immunogen.

4,585,742

MONOCLONAL ANTIBODY WITH SPECIFICITY TO HUMAN SMALL CELL CARCINOMA AND USE THEREOF

Samuel D. Bernal, Wellesley, Mass., assignor to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Filed Dec. 14, 1983, Ser. No. 561,196
Int. Cl.[4] G01N *53/00, 33/44, 33/53, 33/48, 33/564;* **C12N** *15/00;* **A61K** *39/00*
U.S. Cl. 436—548 **15 Claims**

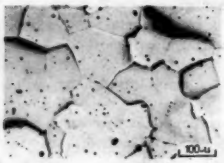
1. A monoclonal antibody which strongly binds to small cell carcinoma cells compared to the binding of said monoclonal antibody to human neuroblastoma cells, human squamus cell carcinoma cells, and human large-cell undifferentiated lung carcinoma cells, in a radioimmunoassay in which said cells are incubated with said monoclonal antibody and a radiolabeled second antibody capable of binding to said monoclonal antibody, said antibody recognizing an approximately 50,000 dalton antigenic determinant on the surface of small cell carcinoma cells.

4,585,743

HIGH DENSITY MAGNESIA CLINKER AND PROCESS FOR ITS PRODUCTION

Kosei Yamamoto, and Akira Kaneyasu, both of Ube, Japan, assignors to Ube Chemical Industries Co., Inc., Yamaguchi, Japan

Filed Apr. 10, 1984, Ser. No. 598,698
Claims priority, application Japan, Apr. 12, 1983, 58-62963
Int. Cl.[4] C04B 35/04
U.S. Cl. 501—108 22 Claims



1. High density magnesia clinker characterized by having a chemical composition, as oxides in weight%, of

MgO: 97.5% or more
CaO: 0.8–2.0%
SiO_2: 0.12–1.0%
Fe_2O_3: 0.3% or less
Al_2O_3: 0.15% or less
B_2O_3: 0.03% or less

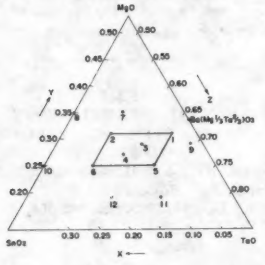
with a bulk density of at least 3.48 g/cm^3, and in which the average diameter of periclase crystals of magnesia is 70μ or more.

4,585,744

DIELECTRIC CERAMIC COMPOSITION FOR MICROWAVE FREQUENCIES

Takehiro Konoike, and Hiroshi Tamura, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Dec. 6, 1984, Ser. No. 678,651
Claims priority, application Japan, Dec. 6, 1983, 58-231159; Sep. 26, 1984, 59-200776
Int. Cl.[4] C04B 35/00
U.S. Cl. 501—135 9 Claims



5. A dielectric ceramic composition for microwave frequencies consisting essentially of

a main component which is a solid solution of BaO, SnO_2, MgO and Ta_2O_5, said solid solution being represented by the general formula

$$Ba(Sn_xMg_yTa_2)O_{7/2-x/2-3y/2}$$

where x, y and z are mole fractions of the respective components, $0.04 \leqq x \leqq 0.20$, $0.25 \leqq y \leqq 0.31$, $0.55 \leqq z \leqq 0.65$ and $x+y+z=1.00$; and

an additive composed of at least one lanthanide oxide, the content of said additive being not more than 10 mole percent in terms of Me_2O_3.

4,585,745

DIELECTRIC CERAMIC COMPOSITION FOR HIGH FREQUENCY PURPOSES

Tutomu Tunooka, and Fumio Mizuno, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Japan

Filed Dec. 14, 1984, Ser. No. 681,947
Claims priority, application Japan, Dec. 16, 1983, 58-238630
Int. Cl.[4] C04B 35/00
U.S. Cl. 501—135 1 Claim

1. A dielectric ceramic composition for high frequency purposes wherein said dielectric ceramic composition for high frequency purposes is expressed by a formula $(Ba_xSr_{1-x})(Ni_{1/3}Nb_{2/3})O_3$ and with a mole fraction range of $0 \leqq x < 1$.

4,585,746

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-12

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,376
Int. Cl.[4] C01B 33/28; B01J 29/06
U.S. Cl. 502—62 13 Claims

1. A method for synthesizing a crystalline silicate ZSM-12 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises (i) preparing a mixture capable of forming said crystalline silicate, said mixture containing sources of alkali metal cations, an oxide of aluminum, bis(N-methylpyridyl)ethylinium cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3: 50–250
H_2O/SiO_2: 5–200
OH^-/SiO_2: 0.01–2.0
M/SiO_2: 0.01–3.0
R/SiO_2: 0.02–1.2

wherein M is said alkali metal cation and R is said bis(N-methylpyridyl)ethylinium cation, (ii) maintaining the mixture at a temperature of from about 80° C. to about 250° C. until crystals of the crystalline silicate are formed and (iii) recovering the crystalline silicate ZSM-12 from step (ii), said recovered crystalline silicate containing alkali metal and bis(N-methylpyridyl)ethylinium cations.

13. Bis(N-methylpyridyl)ethylinium-containing ZSM-12.

4,585,747

SYNTHESIS OF CRYSTALLINE SILICATE ZSM-48

Ernest W. Valyocsik, Yardley, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jun. 27, 1984, Ser. No. 625,375
Int. Cl.[4] C01B 33/28; B01J 29/06
U.S. Cl. 502—62 13 Claims

1. A method for synthesizing a crystalline silicate ZSM-48 exhibiting a characteristic X-ray diffraction pattern as shown in Table 1 of the specification, which comprises (i) preparing a mixture capable of forming said crystalline silicate, said mixture containing sources of alkali metal cations, bis(N-methylpyridyl)ethylinium cation, an oxide of silicon and water and having a composition, in terms of mole ratios, within the following ranges:

SiO_2/Al_2O_3	above about 250
H_2O/SiO_2	5–200
OH^-/SiO_2	0.01–2.0
M/SiO_2	0.01–3.0
R/SiO_2	0.02–1.5

wherein M is said alkali metal cation and R is said bis(N-methylpyridyl)ethylinium cation, (ii) maintaining the mixture at a temperature of from about 80° C. to about 250° C. until crystals of the crystalline silicate are formed and (iii) recovering the crystalline silicate ZSM-48 from step (ii), said recovered crystalline silicate containing alkali metal and bis(N-methylpyridyl)ethylinium cations.

13. Bis(N-methylpyridyl)ethylinium-containing ZSM-48.

4,585,748

CRYSTALLINE CATALYST COMPOSITIONS FOR THE CONVERSION OF HYDROCARBONS

Kazushi Usui, Chiba, and Kinya Tawara, Saitama, both of Japan, assignors to Research Association for Residual Oil Processing, Tokyo, Japan

Filed May 25, 1984, Ser. No. 614,094

Claims priority, application Japan, May 25, 1983, 58-92680

Int. Cl.⁴ B01J *29/06*

U.S. Cl. 502—66 **23 Claims**

1. A crystalline catalyst composition for the conversion of hydrocarbons which comprises:

5 to 90% by weight, based on the total catalyst weight, of a crystalline aluminosilicate zeolite;

5 to 90% by weight, based on the total catalyst weight, of a porous inorganic oxide;

1 to 20% by weight, based on the total catalyst weight, of a Group VI metal component (calculated as the corresponding oxide) of a Group VI metal of the Periodic Table;

0 to 7% by weight, based on the total catalyst weight, of a Group VIII metal component (calculated as the corresponding oxide) of a Group VIII metal of the Periodic Table; and

a third component selected from a phosphorus component and a boron component, and which is prepared by mixing the crystalline aluminosilicate zeolite and a hydrogel or sol of the inorganic oxide to obtain a support comprising the crystalline aluminosilicate zeolite and the inorganic oxide, and contacting the support with a solution containing a Group VI metal component and the third component selected from a phosphorus component and a boron component, the weight ratio of the total amount of the phosphorus and boron components (calcuiated as elemental phosphorus and elemental boron) to the Group VI metal component (calculated as the corresponding oxide) being from 0.01:1 to 0.08:1 and the weight ratio of each of the phosphorus component and the boron component (calculated as elemental phosphorus and elemental boron) to the Group VI metal component (calculated as the corresponding oxide) being below 0.045:1, and said solution having a pH value of from 3.3 to 6.0, thereby depositing the Group VI metal component and the third component selected from the phosphorus component and boron component.

4,585,749

PROCESS FOR THE PREPARATION OF AN OLEFIN POLYMERIZATION CATALYST

Dale E. Pierce, Bartlesville, Okla.; Jerry L. Vaughan, Hobbs, N. Mex., and Oscar D. Nowlin, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 28, 1983, Ser. No. 536,921

Int. Cl.⁴ B01J *31/14*; C08F *4/76*

U.S. Cl. 502—107 **14 Claims**

1. A process for preparing a catalyst for the polymerization of olefins comprising reacting at admixture of anhydrous magnesium dihalide and hydrous magnesium dihalide with reactants comprising a benzoic acid ester and an alkoxytitanium compound to form a first catalyst component and then reacting said first catalyst component with an organoaluminum halide to form a solid product, and then reacting that solid product with a halogenating agent comprising a titanium halide, wherein said admixture is prepared by stirring anhydrous and hydrous magnesium dihalide together in a suitable liquid and wherein the weight ratio of the anhydrous magnesium dihalide to the hydrous magnesium dihalide in said admixture is such that the molar ratio of water to magnesium dihalide in said admixture is in the range of 0.5/1 to 2/1.

4,585,750

COMPOSITE CATALYST FOR HYDROCARBON CONVERSION REACTIONS

Dan Farcasiu, Flemington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 563,818, Dec. 21, 1983, abandoned. This application Feb. 27, 1985, Ser. No. 705,988

Int. Cl.⁴ B01J *31/04, 31/06*

U.S. Cl. 502—159 **9 Claims**

1. A catalyst composite comprising a perfluorinated-polymersulfonic acid and an ion-stabilizing agent selected from the group consisting of C_2–C_6 fluorinated carboxylic acids and alcohols.

4,585,751

HYDROTREATING CATALYSTS

Simon G. Kukes; Stephen L. Parrott, and Karlheinz K. Brandes, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1985, Ser. No. 748,113

Int. Cl.⁴ B01J *27/19*

U.S. Cl. 502—211 **14 Claims**

1. A process for preparing a composition of matter comprising the steps of:

(A) mixing (a) at least one molybdenum and oxygen containing compound, (b) at least one compound of divalent copper, (c) at least one phosphorus and oxygen containing compound, and (d) water, in such amounts and under such conditions as to obtain a solution;

(B) mixing the solution obtained in step (A) with an alumina-containing material;

(C) heating the mixture obtained in step (B) at a first temperature under such conditions as to at least partially dry said mixture; and

(D) heating the at least partially dried mixture obtained in step (C) at a second temperature in the range of from about 200° C. to about 600° C., which is higher than said first temperature, under such conditions as to activate said mixture.

4,585,752

CATALYST COMPOSITION FOR ULTRA HIGH TEMPERATURE OPERATION

Michael V. Ernest, Catonsville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 15, 1984, Ser. No. 640,874

Int. Cl.⁴ F23D *3/40*

U.S. Cl. 502—314 **27 Claims**

1. A high temperature stable catalyst comprising a mixture of:

(a) fine particles of a base metal or base metal oxide selected from the group consisting of chromium, hafnium, niobium, chromium oxide, hafnium oxide, niobium oxide and mixtures thereof; and

(b) composite particles of a ceria promoted, high temperature chemically stabilized refractory oxide powder having at least one platinum group metal thereon,

said composite particles serving as a bonding vehicle for said base metal or base metal oxide particles whereby said base metal or base metal oxide particles are dispersed throughout the mixture and whereby said base metal or base metal oxide exists in a fine particulate form.

4,585,753

LIQUID CHARCOAL AND A METHOD OF PREPARING THE SAME

Aaron Scott, and Barbara F. Scott, both of P.O. Box 13298, Orlando, Fla. 32859

Filed Dec. 20, 1984, Ser. No. 683,926
Int. Cl.[4] B01J *20/20, 20/26;* A01G *1/00*
U.S. Cl. 502—401 6 Claims

1. An aqueous suspension of activated charcoal for use as an agricultural spray consisting of:
(a) water;
(b) activated charcoal having a range of powdered, activated charcoal from 2.00 to 2.25 pounds per gallon of aqueous suspension;
(c) a wetting and suspending agent consisting of octylphenoxypolyethoxy ethanol, having a range of 8.96–9.10 ounces per gallon of aqueous suspension;
(d) a defoaming agent.

3. An aqueous suspension of activated charcoal for use as an agricultural spray consisting of:
(a) water;
(b) activated charcoal having a range of powdered, activated charcoal from 2.00 to 2.25 pounds per gallon of aqueous suspension;
(c) octylphenoxypolyethoxy ethanol, having a range of 8.96 to 9.10 ounces per gallon of aqueous suspension, as a wetting and suspending agent; and
(d) polydimethylsiloxane having a range of 0.5 to 0.75 ounces per gallon of aqueous suspension as a defoaming agent.

4. A method of suspending activated charcoal in water, comprising the following steps:
(a) mixing together a defoaming agent, approximately one-fourth of the total amount to be used of a wetting and suspending agent, and an amount of water equal to approximately 78ths of the final volume of suspension;
(b) continuously agitating the combination of ingredients, throughout the mixing process;
(c) adding powdered activated charcoal, in an amount from 2.00 to 2.25 pounds per gallon of aqueous suspension;
(d) adding the balance of the wetting and suspending agent;
(e) adding the balance of water required to make the final volume; and
(f) continuing the agitation of the resulting suspension for at least 30 minutes.

4,585,754

STABILIZATION OF PROTEINS AND PEPTIDES BY CHEMICAL BINDING WITH CHONDROITIN

Lorraine F. Meisner, and Michael R. Schinitsky, both of Madison, Wis., assignors to Valcor Scientific, Ltd., New York, N.Y.

Division of Ser. No. 569,038, Jan. 9, 1984, abandoned. This application Dec. 6, 1984, Ser. No. 679,087
Int. Cl.[4] C07K *9/00, 17/10;* C12N *11/02, 9/96*
U.S. Cl. 514—8 10 Claims

1. In a method of administering biologically active peptides to enhance or achieve a desired physiological response known to be elicited by said peptide, the improvement which comprises administering said peptide in combination with chondroitin chemically bonded thereto to prolong the desired response.

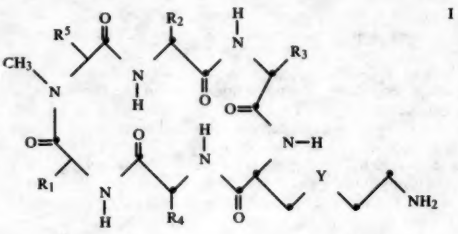
4,585,755

CYCLIC AND BRIDGED CYCLIC SOMATOSTATIN ANALOGS USEFUL AS LOCAL ANTI-INFLAMMATORY AGENTS

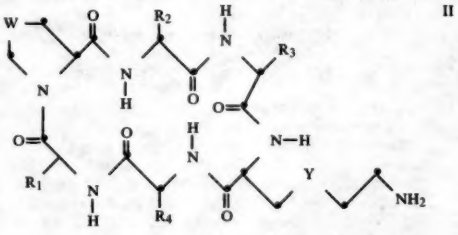
Evan R. Morgan, Bridgewater, and Sanford L. Steelman, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 29, 1985, Ser. No. 728,019
Int. Cl.[4] A61K *37/43;* C07K *7/26*
U.S. Cl. 514—11 8 Claims

1. A method of locally treating inflammatory and allergic conditions comprising applying to the area to be treated an anti-inflammatory and anti-allergically effective amount of a compound having the Formulae:

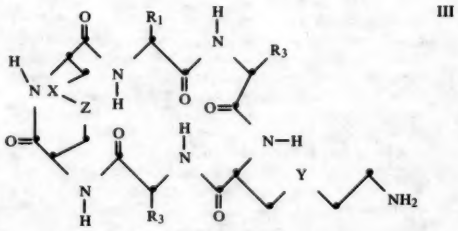


I



II

and



III

wherein in each of the compounds of Formulae I, II and III:
W is S or $(CH_2)_n$ wherein n is 0, 1, or 2;
X and Z are S or CH_2 provided that at least one of X or Z is S;
Y is S or $(CH_2)_m$ wherein m is 0, 1 or 2 such that the sulfur may be in any position along the chain;
R_1 and R_2 are independently loweralkyl, benzyl, substituted benzyl where the substituent may be one or two of loweralkyl, halogen, hydroxy, amino, nitro or loweralkoxy; and loweralkyl substituted with a 5- or 6-membered heterocyclic ring;
R_3 is 3-indolylmethyl or substituted 3-indolylmethyl wherein the substituent may be loweralkyl, loweralkoxy, or halogen;
R_4 is loweralkyl, hydroxyloweralkyl, benzyl, carboxyloweralkyl, aminoloweralkyl or substituted benzyl wherein the substituent may be loweralkyl, loweralkoxy, hydroxy, halogen, amino or nitro; and

R_5 is loweralkyl, benzyl, or substituted benzyl wherein the substituent is loweralkyl, loweralkoxy, hydroxy, halogen amino or nitro.

4,585,756

BOVINE GRF

Paul E. Brazeau, Jr., San Diego; Peter Bohlen, Encinitas; Frederick S. Esch, Oceanside; Nicholas C. Ling, San Diego, and Roger C. L. Guillemin, La Jolla, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Oct. 12, 1983, Ser. No. 541,167

Int. Cl.[4] C07C *103/52;* **A61K** *37/02*

U.S. Cl. 514—12 **10 Claims**

1. A synthetic peptide having the formula: H-Tyr-Ala-Asp-Ala-Ile-Phe-Thr-Asn-Ser-Tyr-Arg-Lys-Val-Leu-Gly-Gln-Leu-Ser-Ala-Arg-Lys-Leu-Leu-Gln-Asp-Ile-Met-Asn-Arg-Gln-Gln-Gly-Glu-Arg-Asn-Gln-Glu-Gln-Gly-Ala-Lys-Val-Arg-Leu-Y wherein Y is OH or NH_2 or a nontoxic salt thereof.

4,585,757

HYPOTENSIVE ACTIVE PEPTIDES

Peter K. T. Pang, and Thomas E. Tenner, Jr., both of Lubbock, Tex., assignors to Texas Tech University Health Sciences Center, Lubbock, Tex.

Filed Jul. 27, 1984, Ser. No. 635,219

Int. Cl.[4] A61K *37/43;* **C07K** *5/08, 5/06, 5/10*

U.S. Cl. 514—18 **6 Claims**

1. An antihypertensive composition comprising an antihypertensive effective amount of a peptide having the amino acid sequence:

Pro-Arg; Lys-Arg-Pro;
Pro-Lys; Arg-Arg-Pro;
Pro-Arg-Arg; Arg-Lys-Pro;
Pro-Lys-Lys; Pro-Pro-Arg-Arg;
Pro-Arg-Lys; Pro-Pro-Arg-Lys;
Pro-Lys-Arg; Pro-Pro-Lys-Lys;
Pro-Pro-Arg; Pro-Pro-Lys-Arg;
Pro-Pro-Lys; Arg-Arg-Pro-Pro;
Lys-Pro-Pro; Lys-Lys-Pro-Pro;
Lys-Lys-Pro; Arg-Lys-Pro-Pro; or Lys-Arg-Pro-Pro,

together with a pharmaceutically suitable carrier.

4,585,758

ANGIOTENSIN-CONVERTING ENZYME INHIBITORS

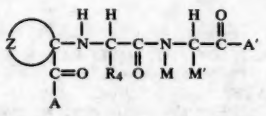
Fu-chih Huang, Boonton, N.J.; John T. Suh, Greenwich, Conn., and Jerry W. Skiles, Tuckahoe, N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Continuation of Ser. No. 496,756, May 20, 1983, abandoned. This application Jan. 10, 1985, Ser. No. 690,386

Int. Cl.[4] A61K *31/47, 37/64;* **C07K** *5/06;* **C07D** *217/06*

U.S. Cl. 514—19 **18 Claims**

1. Compounds of the formula



and their pharmaceutically-acceptable salts, wherein

R_4 is lower alkyl or amino-lower alkyl,

A and A′ are independently hydroxy, lower alkoxy, or benzyloxy,

M and M′ are connected together to form an alkylene bridge of from 2 to 4 carbon atoms or together with the N and C to which they are connected form a 1,2,3,4-tetrahydroisoquinoline ring, and

Z is $—(CH_2)_2—$, $—(CH_2)_3—$, $—(CH_2)_4—$ or $—(CH_2)_5—$.

4,585,759

ANTIBACTERIAL DERIVATIVES OF A NEUTRAL MACROLIDE

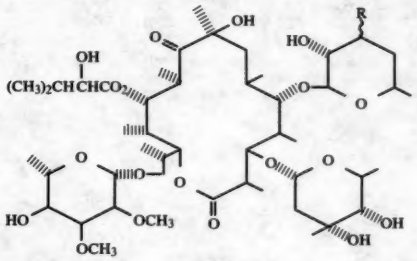
Arthur A. Nagel, Gales Ferry, Conn., assignor to Pfizer inc., New York, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,702

Int. Cl.[4] A61K *31/71;* **C07H** *17/08*

U.S. Cl. 514—29 **4 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of hydroxy, amino, methylamino and dimethylamino, and the pharmaceutically-acceptable acid addition salts of those wherein R is amino, methylamino or dimethylamino.

4. A method for treating a bacterial infection in a mammalian subject, which comprises administering to said subject an antibacterially effective amount of a compound according to claim 1.

4,585,760

DIMETHYLFURANO HETEROCYCLIC ANALOGS OF DAUNOMYCIN

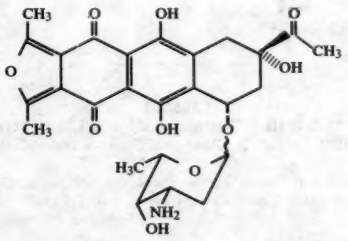
Ving J. Lee, Monsey, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 16, 1981, Ser. No. 284,017

Int. Cl.[4] A61K *31/70;* **C07H** *15/24*

U.S. Cl. 514—34 **8 Claims**

1. A compound of the formula



including the individual α- and β-anomers and the hydrochloride complexes thereof.

7. A therapeutic method for the treatment of a tumor, which comprises administering to a mammal a therapeutically effective non-toxic amount of a compound of claim 1.

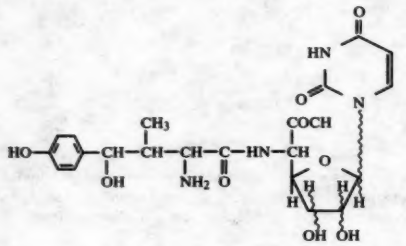
4,585,761

ANTIBIOTICS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS PLANT PROTECTION AGENTS

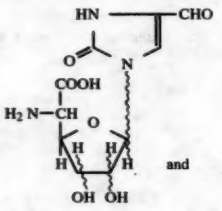
Hans Zähner, Tuebingen; Hartwig Holst, Pohlheim; Gerhard Zoebelein, Leverkusen, and Adelinde Keckeisen, Tuebingen, all of Fed. Rep. of Germany, assignors to Ciba Geigy AG, Basel, Switzerland

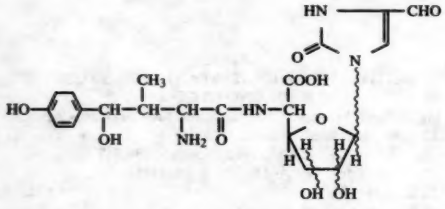
Division of Ser. No. 106,223, Dec. 21, 1979, Pat. No. 4,287,186.
This application May 20, 1981, Ser. No. 265,523
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1979, 2900591
Int. Cl.[4] A01N *31/00*; C07H *17/00*
U.S. Cl. 514—43 5 Claims

1. A substantially pure antibiotic selected from the group consisting of



and





5. An antibiotically active composition comprising a substantially pure antibiotic according to claim 1 and a plant compatible carrier therefor.

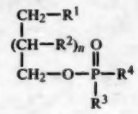
4,585,762

PHOSPHOLIPID DERIVATIVES, PROCESSES FOR USE THEREOF AND PHARMACEUTICAL COMPOSITION OF THE SAME

Tsutomu Teraji, Osaka; Eishiro Todo; Norihiko Shimazaki, both of Toyonaka; Teruo Oku, Osaka, and Takayuki Namiki, Minoo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jul. 13, 1983, Ser. No. 513,451
Claims priority, application United Kingdom, Jul. 30, 1982, 8222020
Int. Cl.[4] A61K *31/66*; C07F *9/09*
U.S. Cl. 514—129 10 Claims

1. A compound of the formula:



(I)

wherein

R^1 is higher alkyl or higher alkoxy;

R^2 is hydrogen, hydroxy or lower alkoxy;

n is 0 or 1;

R^3 is hydroxy; and

R^4 is lower alkoxy or lower alicyclic-oxy group which is substituted with 2 or more hydroxy groups, and may be substituted with lower alkoxy;

or a pharmaceutically acceptable salt thereof.

2. A method for treating fibrosarcoma Meth A which comprises administering a pharmaceutically effective amount of the compound of claim 1 to a subject in need of said treatment.

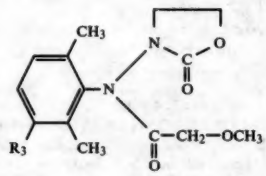
4,585,763

FUNGICIDES CONTAINING PHOSETYL-AL AND AN OXAZOLIDENYLACETAMIDE

André Devoise-Lambert, Tagolsheim, France, and Ulrich Gisi, Wenslingen, Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Division of Ser. No. 459,761, Jan. 21, 1983, Pat. No. 4,507,310.
This application Jan. 7, 1985, Ser. No. 689,137
Claims priority, application United Kingdom, Jan. 26, 1982, 8202125; Oct. 29, 1982, 8231012
Int. Cl.[4] A01N *57/18*
U.S. Cl. 514—141 10 Claims

1. A fungicidal composition comprising a component (a) of the formula I,



I

wherein R_3 is hydrogen, chloro or bromo, and a component (b) which is PHOSETYL-AL; the weight ratio of component (a) to component (b) being in the range of from 1:25 to 1:2.

4,585,764

GASTRIC CYTOPROTECTION WITH 3,3'-THIOBIS[PROPANOIC ACID] IN ORAL ADMINISTRATION OF ASPIRIN

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Apr. 22, 1985, Ser. No. 725,448
Int. Cl.[4] A61K *31/61*
U.S. Cl. 514—163 19 Claims

1. The method of providing cytoprotection of the gastric mucosa in a mammal receiving aspirin perorally which comprises orally administering either prior to or in combination with aspirin a cytoprotectively effective amount of 3,3'-thiobis[propanoic acid], using at least about 1 part of 3,3'-thiobis[-propanoic acid] per part by weight of aspirin.

4,585,765

17β-HYDROXY-17α-METHYL-5α-ANDROSTANO[3,2-C]PYRAZOLE 17-METHYL ETHER

Donald J. Tindall, and Anthony R. Means, both of Houston, Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 949,798, Oct. 10, 1978, Pat. No. 4,356,175. This application Apr. 16, 1980, Ser. No. 140,695

Int. Cl.[4] A61K *31/58*

U.S. Cl. 514—172 3 Claims

1. A method of male contraception which comprises oral administration of a contraceptively effective amount of 17β-hydroxy-17α-methyl5α-androstano[3,2-c]pyrazole 17-methyl ether to a male mammal post puberty selected from the group consisting of man, male dog, tom, bull, stallion, ram, boar, male rat and male mouse.

4,585,766

6-OXYGENATED CORTICOID 17α-CARBONATES AND PROCESS FOR PRODUCTION THEREOF

Issei Nitta, Machida; Kenichiro Nakao; Motoyoshi Miyake, both of Tokyo; Akira Maruyama, Yokohama, and Junko Takashima, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

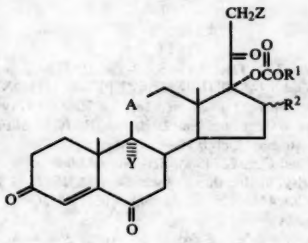
Filed Aug. 28, 1984, Ser. No. 645,099

Claims priority, application Japan, Sep. 7, 1983, 58-164772

Int. Cl.[4] C07J *5/00*

U.S. Cl. 514—180 11 Claims

1. A 6-oxygenated corticoid 17α-carbonate of the formula (I):



(I)

wherein

A is

or —C═O;

Y is hydrogen or halogen;

Z is hydroxyl, halogen, a group of the formula (II);

$$-OSO_2R^3 \quad \text{(II)}$$

wherein R^3 is alkyl or halogenated alkyl having 1 to 10 carbon atoms, or a group of the formula (III):

$$-OCOR^4 \quad \text{(III)}$$

wherein R^4 is alkyl or halogenated alkyl having 1 to 10 carbon atoms;

R^1 is C_1–C_{10} alkyl;

R^2 is hydrogen or C_1–C_{10} alkyl at the α- or β-position; and the bond between C_1 and C_2 shown by a dotted line is a single or double bond.

11. A pharmaceutical composition comprising

(a) an effective amount of the compound of claim 1, and

(b) a pharmaceutically acceptable carrier.

4,585,767

ANTIBACTERIAL PENEM DERIVATIVES

Michael D. Cooke, Newport Pagnell, and Barry C. Ross, Luton, both of Great Britain, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

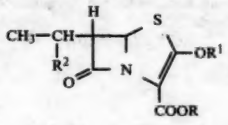
Continuation of Ser. No. 395,646, Jul. 6, 1982. This application Jun. 14, 1984, Ser. No. 619,703

Claims priority, application United Kingdom, Jul. 8, 1981, 8121108; Mar. 11, 1982, 8207136

Int. Cl.[4] C07D *499/00*; A61K *31/425*

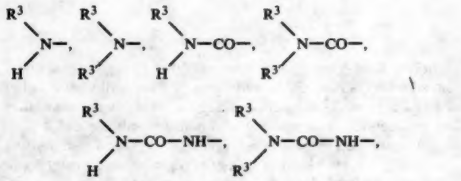
U.S. Cl. 514—210 19 Claims

1. A compound of the formula:

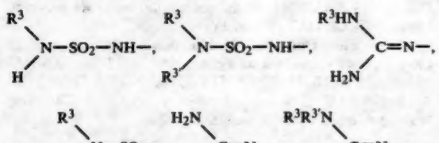


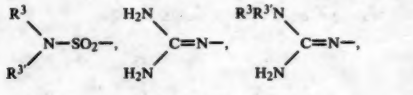
I

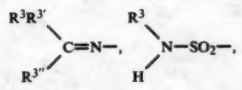
in which R is hydrogen or a carboxyl esterifying group removable by hydrolysis, by photolysis, by reduction, or by enzyme action to give the free acid, R^1 is phenyl, naphthyl, thienyl, pyridyl, quinolyl or isoquinolyl being unsubstituted or substituted by one, two or three substituents, which may be the same or different, selected from the group consisting of halogen atoms and —OH, —NH_2, —NO_2, —CN, —N_3, R^3—, R^3O—, R^3S—, R^3—SO—, R^3—SO_2—, R^3—CO—, R^3O—CO—, R^3—CO—O—, H_2N—CO—,



R^3—CO—NH—, NH_2—CO—NH—, R^3—SO_2—NH—, NH_2—SO_2—NH—, H_2N—SO_2—,







—CF_3, —SCF_3, —$SOCF_3$, —SO_2CF_3 and HO—CO— groups, in which R^3, R^3 and $R^{3''}$ each represents an alkyl group having from 1 to 4 carbon atoms, R^3, $R^{3'}$ and $R^{3''}$ being the same or different, and R^2 represents a hydrogen atom, or a hydroxyl group which may be protected by a hydroxyl protecting group selected from the group consisting of $R^{10}CO$— or R^{11}—, in which R^{10} represents a hydrogen atom or a

straight or branched chain alkyl group having from 1 to 4 carbon atoms, phenyl, phenoxyalkyl having a (C_1–C_4)-alkyl group and R^{11} represents a (C_1–C_4)-alkanoyloxymethyl group; or a pharmaceutically acceptable salt thereof.

4,585,768

1,5-BENZOTHIAZEPINE DERIVATIVES AND PROCESSES FOR PREPARING THE SAME

Mikio Takeda, Urawa; Tokuro Oh-ishi, Tokyo; Hiromichi Nakajima, Urawa, and Taku Nagao, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

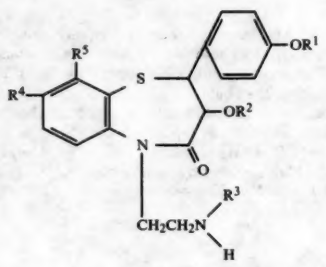
Filed Mar. 22, 1985, Ser. No. 715,116

Claims priority, application United Kingdom, Apr. 10, 1984, 8409258

Int. Cl.[4] A61K *31/55;* **C07D** *281/10*

U.S. Cl. 514—211 **23 Claims**

1. A 1,5-benzothiazepine of the formula:



(I)

wherein R^1 is hydrogen or lower alkyl, R^2 is hydrogen, lower alkanoyl or benzyl, R^3 is hydrogen or lower alkyl and either one of R^4 and R^5 is hydrogen and the other is chlorine, or a pharmaceutically acceptable acid addition salt thereof.

20. A method of producing a platelet aggregation-inhibiting effect on a warm-blooded animal comprising administering to said warm-blooded animal an effective amount of the compound claimed in claim **1**.

4,585,769

BENZENESULFONYL-LACTAMS AND THEIR USE AS ACTIVE SUBSTANCES OF PHARMACEUTICAL COMPOSITIONS

Pierre Roger, Montigny-les-Bretonneux; Patrick Choay, Paris, and Jean-Paul Fournier, Versailles, all of France, assignors to DROPIC - Societe Civile de gestion de droits de propriete Industrielle CHOAY, Paris, France

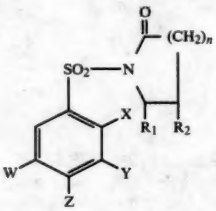
Filed Oct. 18, 1984, Ser. No. 662,187

Claims priority, application France, Oct. 18, 1983, 83 16554

Int. Cl.[4] A61K *31/55;* **C07D** *223/10, 209/32, 211/40*

U.S. Cl. 514—212 **19 Claims**

1. A compound of the formula



wherein:

X is selected from the group consisting of a hydrogen atom and an alkoxy group having from 1 to 4 carbon atoms;

Y is selected from the group consisting of a hydrogen atom, a CF_3 group, and a NO_2 group;

Z is selected from the group consisting of a hydrogen atom, halogen, an alkoxy group having from 1 to 4 carbon atoms and a NO_2 group;

W is selected from the group consisting of a hydrogen atom, halogen, a CF_3 group, a NO_2 group, and an alkoxy group having from 1 to 4 carbon atoms;

n is 1,2 or 3;

R_1 is selected from the group consisting of a hydrogen atom, and an aklyl group having from 1 to 6 carbon atoms;

R_2 is selected from the group consisting of a hydrogen atom, an OH group, an OR group wherein R is selected from the group consisting of an aklyl group having from 1 to 4 carbon atoms or a carboxylic acyl group having from 1 to 6 carbon atoms;

provided that when n is 1:

Y or W is a CF_3 group; and when n is 2 or 3:

X or Z is an alkoxy group having from 1 to 4 carbon atoms or Y or W is a CF_3 or NO_2 group.

19. A method for effecting a psychotropic effect in a host which comprises administering to said host a pharmaceutically acceptable carrier and a psychotropically effective amount, the compound of claim **1**.

4,585,770

NOVEL 6-AMINO-7-HYDROXY-4,5,6,7-TETRAHYDRO-IMIDAZO[4,5,1-J-K][1]-BENZAZEPIN-2-(1H)-ONE

Daniel Fréchet, Paris; Lucien Nédelec, Le Raincy; Guy Plassard, Savigny S/Orge, and Neil L. Brown, Paris, all of France, assignors to Roussel Uclaf, Paris, France

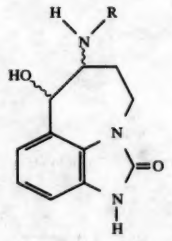
Filed Oct. 12, 1983, Ser. No. 541,085

Claims priority, application France, Oct. 12, 1982, 82 17054

Int. Cl.[4] A61K *31/55, 31/645;* **C07D** *487/04*

U.S. Cl. 514—214 **18 Claims**

1. A compound selected from the group consisting of 6-amino-7-hydroxy-4,5,6,7-tetrahydro-imidazo[4,5,l-j-k][1]-benzazepin-2-(1H)-one derivatives of the formula



wherein R is selected from the group consisting of hydrogen, alkyl and hydroxyalkyl of 1 to 8 carbon atoms, alkyl of 1 to 8 carbon atoms substituted by phenyl or phenoxy, cycloalkyl of 3 to 7 carbon atoms, 4-piperidyl optionally substituted in the 1-position with alkyl of 1 to 4 carbon atoms and the wavy lines indicate that the 7-OH and 6-amino have the trans configuration and their non-toxic, pharmaceutically acceptable acid addition salts.

7. An antihypertensive and hypotensive composition comprising an antihypertensively and hypotensively effective amount of at least one compound of claim **1** and an inert pharmaceutical excipient.

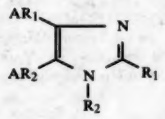
4,585,771

ANTIINFLAMMATORY IMIDAZOLE DERIVATIVES

Walter Klose, Berlin, Fed. Rep. of Germany, and Irmgard Boettcher, Basel, Switzerland, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 434,036, Oct. 13, 1982, Pat. No. 4,466,976.
This application Aug. 17, 1984, Ser. No. 641,641
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1981, 3141063
Int. Cl.[4] A61K *31/55;* C07D *487/14*
U.S. Cl. 514—220 16 Claims

1. An imidazole derivative of the formula



wherein

AR_1 and AR_2 each independently is phenyl, or phenyl substituted by halogen, C_{1-4}-alkyl, or C_{1-4}-alkoxy,

R_1 is pyrrolyl, indolyl, or imidazolyl, or one of these groups substituted by C_{1-6}-alkyl, carboxy, carboxy-C_{1-4}-alkyl, benzyl, or benzenesulfonyl, wherein any carboxy group can be esterified by a C_{1-6}-alkyl moiety, and wherein the point of attachment of the R_1 group to the imidazole ring is a C-atom; and

R_2 is methylene, dimethylene, trimethylene, or tetramethylene linked to the nitrogen atom of R_1,

or a physiologically acceptable salt thereof with an acid, or, when R_1 is substituted by carboxy, a physiologically acceptable salt thereof with a base.

8. A pharmaceutical composition comprising an antiinflammtorily effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

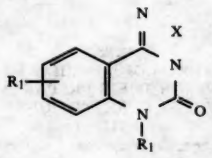
4,585,772

AGENTS FOR COMBATING CIRCULATORY ILLNESSES AND THEIR USE

Bodo Junge; Siegfried Goldmann; Günter Thomas, all of Wuppertal, and Bernward Garthoff, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 322,610, Nov. 18, 1981, abandoned.
This application Jul. 11, 1983, Ser. No. 512,582
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3046366
Int. Cl.[4] A61K *31/505, 31/535;* C07D *487/04*
U.S. Cl. 514—229 21 Claims

1. A pharmaceutical composition containing as an active ingredient an amount effective for treating cardiac insufficiencies, of a compound of the formula



in which

X represents a bridge member having 2 or 3 carbon atoms, which is optionally substituted by 1 or 2 C_1–C_4 alkyl radicals

R_1 represents a hydrogen atom or a C_1–C_{18} alkyl or alkenyl radical, the alkenyl radical containing 1 or 2 double bonds, a phenyl or a benzyl radical, both optionally being substituted by a CF_3 group, a fluorine or a nitro group,

R_4 represents

a hydrogen atom,

a nitro group,

an acylamino group containing an acyl radical, the acyl radical being derived from a C_1–C_{12} aliphatic carboxylic acid or a phenyl carboxylic acid, which is optionally substituted in the phenyl radical by OH, halogen C_1–C_4 alkyl, C_1–C_4 alkoxy, nitro or amino, a sulfonylamino group containing a sulfonyl radical, the sulfonyl radical being derived from an C_1–C_6 aliphatic sulfonic acid or a phenyl sulfonic acid, the phenyl radical of which can be substituted by NO_2, amino, acetamido, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or CF_3, an aminosulfonic group of (1) ammonium, (2) a C_1–C_{12} primary or secondary amine, (3) a heterocyclic amine selected from the group consisting of piperidine, pyrroloidine, morpholine and piperazine or (4) aniline or an aniline which is optionally substituted by halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy, optionally being substituted by halogen, C_1–C_4—alkyl or C_1–C_4—alkoxy,

trifluoromethyl or

trifluoromethoxy.

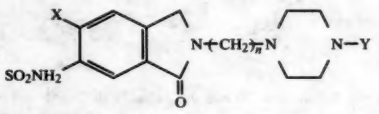
4,585,773

ISOINDOLINYL-ALKYL-PIPERAZINES

Terence M. Dolak, Evansville, Ind., assignor to Bristol-Myers Company, New York, N.Y.

Filed Jul. 11, 1984, Ser. No. 629,649
Int. Cl.[4] C07D *403/06;* A61K *31/495*
U.S. Cl. 514—253 23 Claims

1. A compound of the Formula I:

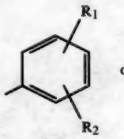


wherein

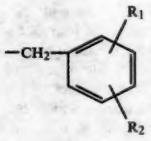
x is halogen or trifluoromethyl

n is an integer ranging from 2 to 5

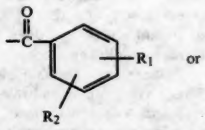
y is



(a)



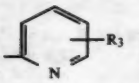
(b)



(c)

-continued

(d)



in which

R_1 is hydrogen, halogen, lower alkyl, lower alkoxy, trifluoromethyl, cyano,

R_2 is hydrogen, halogen, lower alkyl, lower alkoxy,

R_3 is hydrogen, cyano,

or pharmaceutically acceptable salts thereof.

4,585,774

ANILINE DERIVATIVES AND CARDIOTONIC COMPOSITION

Michiaki Tominaga; Yung-hsiung Yang; Hidenori Ogawa, and Kazuyuki Nakagawa, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00152, § 371 Date Sep. 29, 1982, § 102(e) Date Sep. 29, 1982, PCT Pub. No. WO82/03861, PCT Pub. Date Nov. 11, 1982

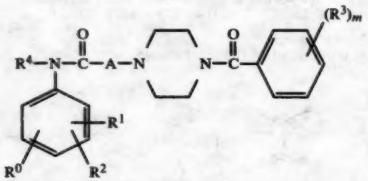
PCT Filed May 4, 1982, Ser. No. 432,902

Claims priority, application Japan, May 8, 1981, 56-69690; Nov. 6, 1981, 56-178722

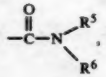
Int. Cl.[4] A61K *31/495*; C07D *295/10*

U.S. Cl. 514—255 **13 Claims**

1. An aniline derivative and its pharmaceutically acceptable salts having the formula,



wherein R^0, R^1 and R^2 are the same or different and each is selected from the group consisting of a hydrogen atom, a halogen atom, a nitro group, an amino group, a carboxy group, a cyano group, a hydroxy group, a sulfonamido group, a lower alkyl group, a lower alkoxycarbonyl group, a lower alkoxy group, a lower alkanoyl group, a lower alkylamino group, a lower alkylthio group, a lower alkanoylamino group or a group of the formula



wherein R^5 and R^6 are the same or different and each is selected from the group consisting of a hydrogen atom, a lower alkyl group or a C_3 to C_8 cycloalkyl group or together with the N atom adjacent thereto form a morpholino group; R^3 is a cyano group, a nitro group, a halogen atom, a lower alkyl group or a lower alkoxy group; m is an interger of 1 to 3; R^4 is a hydrogen atom or a lower alkyl group; and A is a lower alkylene group; provided that when R^3 is a lower alkoxy group, a halogen atom or a lower alkyl group; and when R^0 is a hydrogen atom and A is a methylene group, then R^1 and R^2 are the same or different and should not be hydrogen atoms, halogen atoms, lower alkyl groups or lower alkoxy groups; further that when R^3 is a lower alkoxy group, a halogen atom or a lower alkyl group, and R^0 is a halogen atom, a lower alkyl group or a lower alkoxy group and A is a methylene group, then either one of R^1 and R^2 is a hydrogen atom and the other one should not be a halogen atom, a lower alkyl group or a lower alkoxy group.

13. A cardiotonic composition containing an effective amount of an aniline derivative of claim 1 as the active ingredient in combination with a pharmaceutically acceptable carrier.

4,585,775

SUBSTITUTED PYRIDO (1,2-C)IMIDAZO(1,2-A)BENZIMIDAZOLES, PROCESSES FOR THEIR PREPARATION, THEIR USE AND PHARMACEUTICAL PREPARATIONS BASED ON THESE COMPOUNDS

Volker Hitzel, Hofheim am Taunus; Gerhard Rackur, Kelkheim, and Martin Bickel, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

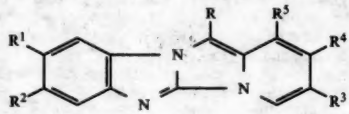
Filed Sep. 13, 1984, Ser. No. 650,106

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1983, 3333314

Int. Cl.[4] A61K *31/44*; C07D *471/12*

U.S. Cl. 514—287 **4 Claims**

1. A compound of the formula I



(I)

in which R^1 and R^2 are identical or different and are hydrogen, (C_1 to C_6)-alkyl, trifluoromethyl, halogen, methoxycarbonyl, ethoxycarbonyl, (C_1 to C_3)-alkoxy or (C_1 to C_4)-alkanoyl, R^3, R^4 and R^5 are identical or different and are hydrogen, methyl, methoxy, ethoxy, methoxyethoxy or ethoxyethoxy and R is hydrogen or a group SR^6, in which R^6 is the lone, unpaired electron of the 12-sulfenyl radical, hydrogen, (C_1 to C_6)-alkyl which can be substituted by (C_1 to C_4)-alkoxy or mono- or poly-substituted by (C_6 to C_{10})-aryl, or is (C_2 to C_6)-alkenyl, (C_2 to C_6)-alkynyl, (C_1 to C_7)-alkanoyl, (C_5 to C_7)-cycloalkanoyl, benzoyl which can be mono- or poly-substituted by (C_1 to C_7)-alkyl, (C_1 to C_5)-alkoxy, (C_1 to C_4)-alkoxycarbonyl, cyano, trifluoromethyl and/or halogen, or is furoyl, phenacyl, phenoxyacetyl, phenylacetyl wherein the three latter of which may be substituted as defined for benzoyl or another conventional thiol-protective group, and physiologically acceptable salts thereof.

3. A method for treating gastro-intestinal diseases, caused by excessive gastric acid secretion, by administering an effective amount of a compound according to claim 1 or pharmaceutically acceptable salts thereof.

4,585,776

4-CHLORO-FURO-(3,4-c)-PYRIDINE DERIVATIVES PROCESS FOR THEIR PREPARATION AND THERAPEUTICAL COMPOSITIONS CONTAINING THEM

André Esanu, Paris, France, assignor to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.), Paris, France

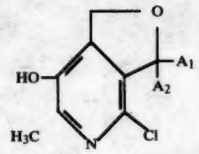
Filed Oct. 16, 1984, Ser. No. 661,376

Claims priority, application United Kingdom, Oct. 18, 1983, 8327817

Int. Cl.[4] A61K *31/44*; C07D *491/048*

U.S. Cl. 514—302 **4 Claims**

1. A 1,3-dihydro-6-methyl-7-hydroxy-furo-(3,4-c)-pyridine derivative of the formula



wherein each of A_1 and A_2 independently represents a hydrogen atom, a straight chain saturated hydrocarbon group having from 1 to 5 carbon atoms or a straight chain unsaturated hydrocarbon group having from 2 to 5 carbon atoms, a thienyl group, a furyl group, a phenyl group, a phenylalkyl group or a phenylalkenyl group, each of the groups represented by A_1 and A_2 being unsubstituted or being substituted by one or more chlorine or fluorine atoms, trifluoromethyl groups, alkyl groups having from 1 to 5 carbon atoms, alkoxy groups having from 1 to 5 carbon atoms, alkylthio groups having from 1 to 5 carbon atoms, dialkylamino groups in which each alkyl group has from 1 to 5 carbon atoms, dialkylaminoalkoxy groups in which each of the two alkyl groups and the alkoxy group has from 1 to 5 carbon atoms or an α- or β-N-pyrrolidinyl-alkoxy group in which the alkoxy group has from 1 to 5 carbon atoms.

3. A pharmaceutical composition comprising a diuretically or hypotensively effective amount of a 1,3-dihydro-6-methyl-7-hydroxy-furo-(3,4-c)pyridine derivative as defined in claim 1 in admixture with a pharmaceutically acceptable diluent or carrier.

4,585,777

(−)-TRANS-4-(4-FLUOROPHENYL)-3-(4-METHOXYPHENOXY)METHYLPIPERIDINE FOR POTENTIATING 5-HT

Jorgen B. Lassen, Glostrup; Jorgen A. Christensen, Virum; Erling N. Petersen, Glostrup, and John B. Hansen, Lyngby, all of Denmark, assignors to A/S Ferrosan, Soborg, Denmark

Filed Feb. 7, 1984, Ser. No. 577,844

Int. Cl.[4] C07D *211/22*; A61K *31/445*

U.S. Cl. 514—317 **8 Claims**

1. A compound selected from the group consisting of (−)-trans-4-(4-fluorophenyl)-3-(4-methoxyphenoxy)methylpiperidine and a pharmaceutically-acceptable acid addition salt thereof.

5. A method of potentiating the 5-HT of a subject in need thereof comprising the step of administering to the said subject an effective 5-HT potentiating amount of a compound of claim 1.

4,585,778

TRIAZOLE ANTIFUNGAL AGENTS

Geoffrey E. Gymer, and Kenneth Richardson, both of Canterbury, England, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 499,709, May 31, 1983, Pat. No. 4,507,484.

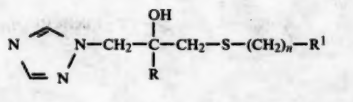
This application Feb. 1, 1985, Ser. No. 697,602

Claims priority, application United Kingdom, Jul. 24, 1982, 8221477

Int. Cl.[4] A01N *43/40*, *43/64*; A61K *31/445*, *31/41*

U.S. Cl. 514—326 **32 Claims**

1. A pharmaceutical composition suitable for oral, parenteral or topical treatment of a susceptible fungal infection in man which comprises a pharmaceutical carrier and an antifungal amount of a compound of the formula



(I)

where

R is a phenyl group optionally substituted by 1 to 3 substituents each independently selected from halo, CF_3, C_1–C_4 alkyl and C_1–C_4 alkoxy;

R^1 is selected from (a) —SO.(C_1–C_4 alkyl), (b) —SO_2(C_1–C_4 alkyl), (c) —$SO_2NR^2R^3$ where either R^2 and R^3 are both C_1–C_4 alkyl, or R^2 and R^3 together with the N atom to which they are attached represent piperidino, (d) —NH-SO_2(C_1–C_4 alkyl) and (e) —$CONR^4R^5$ where either R^4 is H or C_1–C_4 alkyl and R^5 is C_1–C_4 alkyl, or R^4 and R^5 together with the N atom to which they are attached represent piperidino; and

n is 1 or 2; with the proviso that n is 2 when R^1 is —NH-SO_2(C_1–C_4 alkyl);

or a pharmaceutically acceptable or agriculturally acceptable acid addition salt thereof.

4,585,779

CIS-4A-ARYL-1,2,3,4,4A,9B-HEXAHYDRO-BENZOFURO[3,2-C]PYRIDINES AND INTERMEDIATES THEREOF

Solomon S. Klioze, Flemington, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

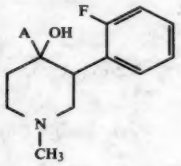
Division of Ser. No. 400,576, Jul. 22, 1982, Pat. No. 4,507,306.

This application Dec. 21, 1984, Ser. No. 685,099

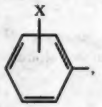
Int. Cl.[4] A61K *31/445*; C07D *405/04*, *211/12*

U.S. Cl. 514—336 **21 Claims**

1. A compound of formula



wherein A is



2-furyl or 3-furyl, X being hydrogen, halogen, methyl or methoxy, halogen being fluorine, chlorine, bromine, or iodine; a stereoisomer thereof and a pharmaceutically acceptable acid addition salt of any of the foregoing.

19. A method of treatment which comprises administering to a patient in need of relief from pain a pharmaceutically effective amount of compound defined in claim 1.

4,585,780

PHARMACEUTICAL COMPOSITIONS

Robert C. Hider, Clacton; George Kontoghiorghes, and Jack Silver, both of London, all of England, assignors to National Research Development Corp., London, England

Filed Mar. 22, 1984, Ser. No. 592,271

Claims priority, application United Kingdom, Mar. 24, 1983, 8308054

Int. Cl.[4] A61K *31/555*

U.S. Cl. 514—348 **34 Claims**

1. A method for the treatment of a patient having a toxic concentration of a metal selected from the group consisting of iron, copper, and aluminum in the body of said patient which comprises administering to said patient a therapeutic amount of a 3-hydroxypyrid-2-one or 3-hydroxypyrid-4-one in which the hydrogen atom atached to the nitrogen atom is replaced by an aliphatic acyl group, an aliphatic hydrocarbon group, or an

aliphatic hydrocarbon group substituted by one or more substituents selected from aliphatic acyl, alkoxy, aliphatic amide, aliphatic ester, halogen and hydroxy groups, and wherein one or more of the hydrogen atoms attached to ring carbon atoms can be replaced by an aliphatic acyl, alkoxy, aliphatic amide, aliphatic ester, halogen or hydroxy group, an aliphatic hydrocarbon group, or an aliphatic hydrocarbon group substituted by an alkoxy, aliphatic ester, halogen or hydroxy group, but excluding compounds in which said replacement of hydrogen atoms is effected only by aliphatic hydrocarbon groups, or a salt thereof containing a physiologically acceptable cation.

4,585,781

HETEROCYCLIC DERIVATIVES

David Bays; Roger Hayes, and Philip Blatcher, all of Hertfordshire, United Kingdom, assignors to Glaxo Group Limited, London, England

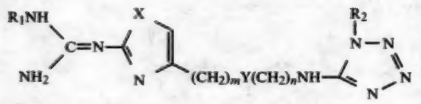
Filed Dec. 30, 1983, Ser. No. 567,005

Claims priority, application United Kingdom, Dec. 31, 1982, 8237069; Mar. 24, 1983, 8308171

Int. Cl.[4] C07D *403/12, 417/12;* A61K *31/425, 31/415*

U.S. Cl. 514—370 **7 Claims**

1. A compound of formula (I)



(I)

or a physiologically acceptable salt or hydrate thereof, in which

R_1 represents a hydrogen atom or a C_{1-6} alkyl, C_{2-7} alkanoyl, aroyl or trifluoro C_{1-6} alkyl group;

R_2 represents a hydrogen atom or a C_{1-6} alkyl or C_{3-6} alkenyl group or C_{2-6} alkyl group substituted by a hydroxy or C_{1-6} alkoxy group;

X represents a sulphur atom or NH;

Y represents an oxygen or sulphur atom or a bond;

m represents 1, 2 or 3;

n represents 2, 3 or 4; and

aryl as part of a group represents phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms.

4,585,782

AZOLE DERIVATIVES ANTIMYCOTIC AGENTS WHICH RELEASE THE ACTIVE COMPOUNDS AT A RELATIVELY HIGH RATE

Manfred Plempel, Wuppertal; Manfred Bücheler, Overath; Wolfgang Gau; Erik Regel, both of Wuppertal; Karl H. Büchel, Burscheid, and Hans-Jürgen Ploschke, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

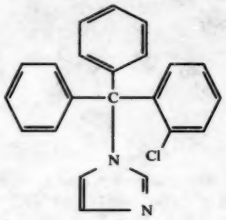
Continuation of Ser. No. 374,553, May 3, 1982, abandoned, which is a continuation of Ser. No. 170,336, Jul. 21, 1980, abandoned. This application Feb. 21, 1984, Ser. No. 581,527

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932691; Aug. 27, 1979, 2934542

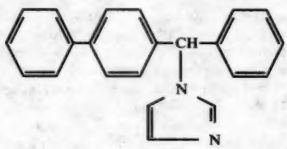
Int. Cl.[4] A61K *31/415*

U.S. Cl. 514—396 **10 Claims**

1. An antimycotic composition comprising (1) an antimycotic effective amount of an azole derivative selected from the group consisting of the compound of the formula



and the compound of the formula



(2) an acid, a buffer system or a mixture thereof consisting of an acid and a salt thereof to provide a pH of 3 to 4 or less in aqueous solution and (3) an inert pharmaceutical carrier, said compositions having an ionic strength between 0.1 and 0.8.

4,585,783

ANALGESIC AND ANTI-INFLAMMATORY COMPOSITIONS COMPRISING DIPHENHYDRAMINE AND METHODS OF USING SAME

Abraham Sunshine, New York; Eugene M. Laska, Larchmont, and Carole E. Siegel, Mamaroneck, all of N.Y., assignors to Richardson-Vicks, Inc., Wilton, Conn.

Division of Ser. No. 578,288, Feb. 8, 1984, Pat. No. 4,522,826. This application Mar. 14, 1985, Ser. No. 711,525

Int. Cl.[4] A61K *31/40, 31/195*

U.S. Cl. 514—408 **26 Claims**

1. A method for eliciting an enhanced analgesic and anti-inflammatory response in a mammalian organism in need of such treatment, comprising administering to such organism

(i) an analgesically and anti-inflammatorily effective amount of tolmetin or indomethacin or a pharmaceutically acceptable salt thereof, and

(ii) an analgesically and anti-inflammatorily potentiating amount of diphenhydramine.

4,585,784

PYRROLE-2-ACETYLAMINO ACID DERIVATIVE COMPOUNDS

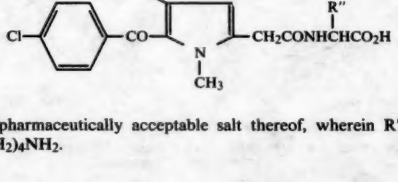
John R. Carson, Norristown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jan. 26, 1983, Ser. No. 461,055

Int. Cl.[4] A61K *31/40;* C07D *207/333*

U.S. Cl. 514—423 **7 Claims**

1. A pyrrole-2-acetylamino acid compound of the following formula:



or pharmaceutically acceptable salt thereof, wherein R″ is $(CH_2)_4NH_2$.

5. A pharmaceutical composition which comprises a compound according to claim 1 in association with a pharmaceutically acceptable diluent or carrier.

6. A method for treating inflamation in an animal which comprises administering to the animal a pharmaceutically effective amount of the pharmaceutical composition of claim 5.

7. A method of treating pain in an animal which comprises administering to the animal a pharmaceutically effective amount of the pharmaceutical composition of claim 5.

4,585,785

CIS AND TRANS-3-ARYLOXY-4-HYDROXYPYRROLIDINES USED AS ANTI-ARRHYTHMICS

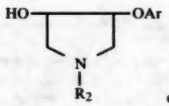
David A. Walsh, and William J. Welstead, Jr., both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Division of Ser. No. 2,151, Jan. 9, 1979, abandoned. This application Mar. 10, 1980, Ser. No. 128,696

Int. Cl.[4] A61K *31/40;* **C07D** *207/12*

U.S. Cl. 514—425 **3 Claims**

1. A method of treating arrhythmias in animals which comprises administering to said animal an effective amount of a compound selected from 3-aryloxy-4-hydroxypyrrolidines having the formula:



cis and trans isomers

wherein R_2 is hydrogen or lower alkyl, Ar is selected from the group consisting of 1-naphthyl, 2-naphthyl, 4-indanyl, and 5-indanyl and the pharmaceutically acceptable acid addition salts thereof.

4,585,786

RODENTICIDAL 4-HYDROXY-2H-1-BENZOTHIOPYRAN-2-ONE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

Jean-Jacques Berthelon, Decines-Charpieu, France, assignor to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

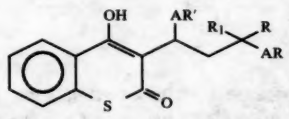
Filed Mar. 27, 1985, Ser. No. 716,394

Claims priority, application France, Apr. 12, 1984, 84 05794

Int. Cl.[4] A61K *31/38;* **C07D** *335/06*

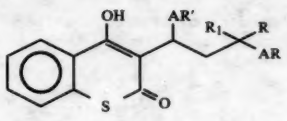
U.S. Cl. 514—432 **12 Claims**

1. Hydroxy-4-2H-1-benzothiopyran-2-ones having the following formula:



in which when R_1 is hydrogen, R and AR′ may form a tetrahydronaphth-1H-yl radical; R and R_1 may form a carbonyl group; when R is hydrogen, R_1 may be a hydroxyl group; AR is a biphenyl or phenoxyphenyl group or biphenyl substituted by a halogen or phenoxyphenyl substituted by a halogen, AR′ is a phenyl group or a thienyl group or may form with R a tetrahydronaphth-1H-yl when R_1 is hydrogen.

9. A method of killing rodents comprising administering a rodenticicially effective amount of a hydroxy-4-2H-1-benzothiopyran-2-one having the following formula:



in which when R_1 is hydrogen, R and AR′ may form a tetrahydronaphth-1H-yl radical; R and R_1 may form a carbonyl group; when R is a hydrogen, R_1 may be a hydroxyl group; AR is a biphenyl or phenoxyphenyl group or phenoxyphenyl substituted by a halogen or biphenyl substituted by a halogen, AR′ is a phenyl group or a thienyl group or may form with R a tetrahydronaphth-1H-yl radical when R_1 is hydrogen, to a rodent.

4,585,787

5-[2(OR 3)-HYDROXYPHENYLSULFONYL]THIOPHENE-2-SULFONAMIDES FOR THE TOPICAL TREATMENT OF ELEVATED INTRAOCULAR PRESSURE

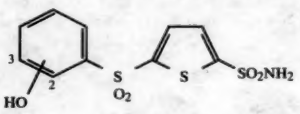
Kenneth L. Shepard, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 505,673, Jun. 20, 1983, Pat. No. 4,542,152, which is a continuation-in-part of Ser. No. 497,388, May 23, 1983, abandoned. This application Aug. 12, 1985, Ser. No. 764,380

Int. Cl.[4] A61K *31/38*

U.S. Cl. 514—445 **6 Claims**

1. A method for treating elevated intraocular pressure which comprises topically applying to an eye in need of such treatment an effective intraocular pressure lowering amount of a carbonic anhydrase inhibitor of the formula:



or an ophthalmologically acceptable salt thereof, wherein: the —OH in the 2- or 3-position.

4,585,788

6,11-DIHYDRODIBENZ[B,E]OXEPIN-ACETIC ACIDS AND DERIVATIVES

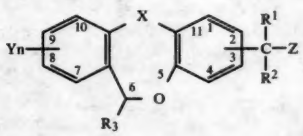
Grover C. Helsley, Pottersville; Arthur R. McFadden, East Brunswick, both of N.J., and David Hoffman, North Kingstown, R.I., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 394,801, Sep. 6, 1973, abandoned. This application Apr. 10, 1974, Ser. No. 459,774

Int. Cl.[4] C07D *313/12;* **A61K** *31/335*

U.S. Cl. 514—450 **21 Claims**

1. A compound of the formula



in which X is C=O, CHCl, CHBr, CH_2 or $CHOR^4$; Y is alkyl or alkoxy of 1 to 4 carbon atoms, F, Cl, Br or trifluoromethyl; n is 0 or 1; Z is $COOR^5$, CH_2OR^5, $CONHR^5$, $CONR_2^5$ or $CONHOR^5$; and R^1, R_2, R^3, R^4 and R^5 are hydrogen or alkyl

of 1 to 4 carbon atoms; and the physiologically tolerable salts thereof.

6. A method of treating inflammation and pain which comprises administering to a patient an effective amount of the compound defined in claim 1.

4,585,789

NEW FURANONE DERIVATIVES, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Masanori Okamoto, Osaka; Itsuo Uchida, Kyoto; Kazuyoshi Umehara, Ashiya; Masanobu Kohsaka, Sakai, and Hiroshi Imanaka, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

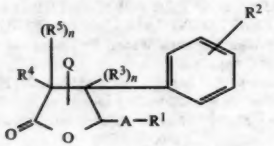
Filed Jun. 29, 1983, Ser. No. 508,892

Claims priority, application Japan, Jul. 19, 1982, 57-126599

Int. Cl.⁴ C07D *307/32, 307/60;* **A61K** *31/34*

U.S. Cl. 514—461 **4 Claims**

1. A compound of the following formula or its pharmaceutically acceptable salt:



wherein A is a lower alkylene group; R^1 is a carboxy, hydroxy, lower alkoxycarbonyl, lower alkoxycarbonylamino phenyl(lower)alkyloxy, benzoloxy, or lower alkanoyloxy group; R^2 is a hydrogen or halogen atom or a halo(lower)alkyl group; R^3 is a hydrogen or halogen atom; R^4 is a hydroxy, lower alkoxy, lower alkanoyloxy or lower alkoxycarbonyloxy group and R^5 is a hydrogen or halogen atom; Q is the number of double bonds which is equal to 0 or 1; n is an integer of 0 or 1, provided that when Q is 0, n is 1 and when Q is 1, n is 0.

4,585,790

PHARMACEUTICAL COMPOSITIONS

John M. Padfield, Meldreth, and Ian K. Winterborn, Stevenage, both of England, assignors to Glaxo Group Limited, London, England

Filed May 11, 1984, Ser. No. 609,215

Claims priority, application United Kingdom, May 13, 1983, 83 13217

Int. Cl.⁴ A61K *31/34*

U.S. Cl. 514—471 **13 Claims**

1. A pharmaceutical composition which is an aqueous formulation containing an effective amount of ranitidine and/or one or more physiologically acceptable salts thereof for treatment of conditions mediated through histamine H_2-receptors, said formulation having a pH within the range of 6.5–7.5.

4,585,791

FURYL DERIVATIVES OF 16-SUBSTITUTED PROSTAGLANDINS

Franco Faustini, Milan; Achille Panzeri, Merate; Fabrizio Orzi, Milan; Enrico di Salle, Milan, and Roberto Ceserani, Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

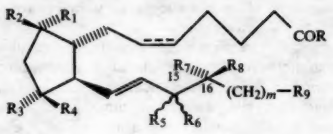
Filed Nov. 1, 1984, Ser. No. 667,367

Claims priority, application United Kingdom, Nov. 4, 1983, 8329559

Int. Cl.⁴ A61K *31/34;* **C07D** *307/54*

U.S. Cl. 514—471 **12 Claims**

1. An optically active or racemic compound of the following formula (I)



(I)

wherein

R is

(1) —OH or —OR′ wherein R′ is C_1–C_6 alkyl, or

(2)

wherein each of R″ and R‴ is, independently, hydrogen or C_1–C_6 alkyl;

one of R_1 and R_2 is hydrogen and the other is hydroxy, or R_1 and R_2, taken together, form an oxo group;

one of R_3 and R_4 is hydrogen and the other is hydroxy;

one of R_5 and R_6 is hydroxy and the other is hydrogen;

one of R_7 and R_8 is hydrogen and the other is a C_1–C_4 alkyl or tri-halo-C_1–C_4 alkyl group;

m is an integer of 1 to 3;

R_9 is a 2-furyl or 3-furyl group, optionally substituted by one or more substituents chosen from C_1–C_4 alkyl, C_1–C_4 alkoxy, tri-halo-C_1–C_4 alkyl and halogen; and the symbol == represents a single bond or a cis double bond,

and the pharmaceutically or veterinarily acceptable salts thereof.

9. A method of inhibiting or preventing ulcers in a patient in need of it, said method comprising administering an effective amount of a compound of claim 1.

11. A method of producing luteolytic effect in a patient in need of it, said method comprising administering an effective amount of a compound of claim 1.

4,585,792

PROTECTIVE ADDITIVE TO VAGINAL PRODUCTS AND CATAMENIALS

Joseph Jacob, and John R. Lau, both of Wooster, Ohio, assignors to Technology Unlimited Inc., West Wooster, Ohio

Continuation-in-part of Ser. No. 492,022, May 5, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,304

Int. Cl.⁴ A61K *31/34, 9/24, 9/26*

U.S. Cl. 514—474 **2 Claims**

1. A method of detoxifying the toxin produced by *S. aureus* in the cervix and vaginal mucosa of a human comprising the administration of a detoxifying amount of L-ascorbic acid to the cervix and vaginal mucosa by means of a menstrual tampon, said L-ascorbic acid being physically entrapped by the interstitial spaces of the tampon.

4,585,793

THIOESTER INHIBITORS OF SERINE PROTEASES

James C. Powers, Atlanta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Filed May 9, 1983, Ser. No. 492,825

Int. Cl.⁴ C07C *153/023;* **A61K** *31/265*

U.S. Cl. 514—513 **3 Claims**

1. A compound of the formula:

2-(R—Y—X)—C_6H_4—CO—S—R′

wherein

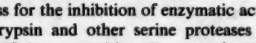
R′ is selected from the group consisting of C_{1-6} alkyl and C_{1-4} alkyl with an attached phenyl group,

X is NH,

Y is CO,

R is selected from the group consisting of C_{1-5} alkyl, C_{1-5} fluorinated alkyl, and C_{1-5} alkoxy.

2. A process for the inhibition of enzymatic activity of elastase, chymotrypsin and other serine proteases with similar substrate specificity, comprising the step of adding to a medium containing the protease an amount of an inhibitor effective to inhibit said activity, the inhibitor, having the following structure:



wherein

R' is selected from the group consisting of C_{1-6} alkyl and C_{1-4} alkyl with an attached phenyl group,

X is NH,

Y is CO, and

R is selected from the group consisting of C_{1-5} alkyl, C_{1-5} fluorinated alkyl, and C_{1-5} alkoxy.

4,585,794

METHOD FOR TREATING RENAL INSUFFICIENCY

Jean Freyria, Vaucresson, and Brigitte Lantz, Paris, both of France, assignors to ADIR, S.A.R.L., Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 516,936, Jul. 25, 1983, abandoned. This application Jan. 25, 1985, Ser. No. 694,710

Claims priority, application France, Jul. 29, 1982, 82 13232

Int. Cl.[4] A61K *31/24*

U.S. Cl. 514—434 **4 Claims**

1. A method for preventing or treating renal insufficiency, by increasing renal glomerular filtration rate and renal plasma flow, in a hypertensive patient in need thereof, which comprises the step of orally or parenterally administering to said patient a compound selected from the group consisting of 8-(3-tert.-butylamino-2-hydroxypropoxy)-thiachroman, an optical isomer thereof, and an addition salt thereof, in a daily dosage amount of 2 to 10 mg.

4,585,795

CONTROL AGENT FOR PROTECTING TIMBER AGAINST FUNGI EMPLOYING A MIXTURE OF AN ORGANIC CARBOXYLIC ACID SALT AND QUATERNARY AMMONIUM SALT

Irma Linderborg, Kuusankoski, Finland, assignor to Kymi Kymmeno Oy, Helsinki, Finland

Continuation-in-part of Ser. No. 475,769, Mar. 16, 1983, abandoned. This application Apr. 24, 1985, Ser. No. 726,299

Claims priority, application Finland, Mar. 19, 1982, 820968; Feb. 3, 1983, 830374

Int. Cl.[4] A01N *37/00*

U.S. Cl. 514—558 **3 Claims**

1. A water-soluble control agent composition for protecting timber, especially sawn timber, against fungi which cause sapstain and mildew, comprising a synergistic mixture consisting essentially of an alkali metal salt of a biocidal organic carboxylic acid selected from the group consisting of 2-ethyl hexanoic acid, isononanoic acid, iso-octanoic acid, heptanoic acid, capric acid and caprylic acid, and trimethylcocoammonium chloride, the weight proportion of said alkali metal salt to said trimethylcocoammonium chloride being in the range of about 33:67 to about 67:33.

4,585,796

NOVEL PHENETHANOLAMINES

Leo Alig, Kaiseraugst, and Marcel Müller, Frenkendorf, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

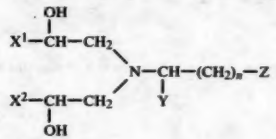
Filed Aug. 1, 1983, Ser. No. 518,990

Claims priority, application Switzerland, Aug. 10, 1982, 4787/82; May 27, 1983, 2897/83

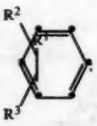
Int. Cl.[4] A61K *31/165, 31/38;* C07C *103/28;* C07D *333/20*

U.S. Cl. 514—620 **31 Claims**

1. A racemic compound of the formula:



wherein n is an integer of 1 to 5; X^1 is a group of the formula:



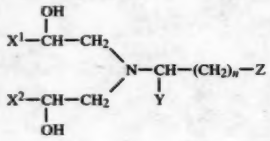
X^2 is hydrogen, lower alkyl or a group of the formula:

Y is hydrogen, lower-alkyl, hydroxymethyl, carboxy or lower-alkoxycarbonyl; Z is a group of the formula:

R^1, R^2 and R^3 individually are hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, acylamino, lower-alkoxybenzylamino, nitro, carbamoyl, trifluoromethyl or lower-alkylsulphonyl-methyl; R^4 and R^{51} individually are lower-alkanoyl, carboxy, cyano, hydroxy-lower-alkyl, acyloxy, $-C(R^6)=C(R^7)-COOR^8$, $-SO_2R^9$, $-C(O)R^9$ or $-CH_2R^{10}$; R^6, R^7 and R^8 individually are hydrogen or lower alkyl; R^9 is amino, mono-lower-alkylamino or a group R; R is di-loweralkylamino, piperidino, morpholino, thiamorpholino, piperazino, or the ether group of a lower aliphatic, cycloaliphatic or araliphatic alcohol or of phenol; and R^{10} is the group R and, when at least one of R^1, R^2 and R^3 is hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, lower-alkoxybenzylamino or trifluoromethyl and simultaneously Y is hydrogen, lower-alkyl or hydroxymethyl, R^{10} can also be amino or mono-lower-alkylamino,

enantiomers or diastereomers thereof, or physiologically compatible salts thereof.

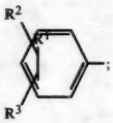
23. A method for treating obesity in a mammal comprising administering to said mammal a racemic compound of the formula:



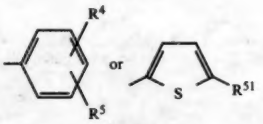
I

wherein n is an integer of 1 to 5; X^1 is a group of the formula:

X^2 is hydrogen, lower alkyl or a group of the formula:



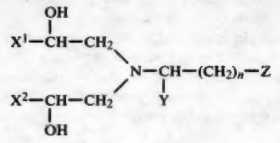
Y is hydrogen, lower-alkyl, hydroxymethyl, carboxy or loweralkoxycarbonyl; Z is a group of the formula:



R^1, R^2 and R^3 individually are hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, acylamino, lower-alkoxybenzylamino, nitro, carbamoyl, trifluoromethyl or lower-alkylsulphonylmethyl; R^4, R^5 and R^{51} individually are hydrogen, lower-alkyl, lower alkoxy, lower-alkanoyl, carboxy, cyano, hydroxy, hydroxy-lower-alkyl, acyloxy, $-C(R^6)=C(R^7)COOR^8$, $-SO_2R^9$, $-C(O)R^9$ or $-CH_2R^{10}$, with the proviso that R^4 is not hydrogen when R^5 is hydroxy, lower-alkyl or lower-alkoxy; R^6, R^7 and R^8 individually are hydrogen or lower-alkyl; R^9 is amino, mono-lower-alkylamino or a group R; R is di-lower-alkylamino, piperidino, morpholino, thiamorpholino, piperazino, or the ether group of a lower aliphatic, cycloaliphatic or araliphatic alcohol or of phenol; and R^{10} is a group R and, when at least one of R^1, R^2 and R^3 is hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, lower-alkoxybenzylamino or trifluoromethyl and simultaneously Y is hydrogen, lower-alkyl or hydroxymethyl, R^{10} can also be amino or mono-lower-alkylamino,

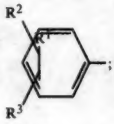
an enantiomer or diastereomer thereof, or a physiologically compatible salt thereof, in an amount which is effective as an anti-obesity agent.

26. A method for treating diabetes mellitus in a mammal comprising administering to said mammal a racemic compound of the formula:

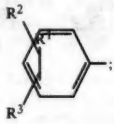


I

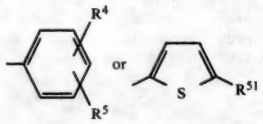
wherein n is an integer of 1 to 5; X^1 is a group of the formula:



X^2 is hydrogen, lower alkyl or a group of the formula:



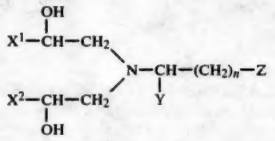
Y is hydrogen, lower-alkyl, hydroxymethyl, carboxy or lower-alkoxycarbonyl; Z is a group of the formula:



R^1, R^2 and R^3 individually are hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, acylamino, lower-alkoxybenzylamino, nitro, carbamoyl, trifluoromethyl or lower-alkylsulphonylmethyl; R^4, R^5 and R^{51} individually are hydrogen, lower-alkyl, lower alkoxy, lower-alkanoyl, carboxy, cyano, hydroxy, hydroxy-lower-alkyl, acyloxy, $-C(R^6)=C(R^7)COOR^8$, $-SO_2R^9$, $-C(O)R^9$ or $-CH_2R^{10}$, with the proviso that R^4 is not hydrogen when R^5 is hydroxy, lower-alkyl or lower-alkoxy; R^6, R^7 and R^8 individually are hydrogen or lower-alkyl; R^9 is amino, mono-lower-alkylamino or a group R; R is di-lower-alkylamino, piperidino, morpholino, thiamorpholino, piperazino, or the ether group of a lower aliphatic, cycloaliphatic or araliphatic alcohol or of phenol; and R^{10} is a group R and, when at least one of R^1, R^2 and R^3 is hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, lower-alkoxybenzylamino or trifluoromethyl and simultaneously Y is hydrogen, lower-alkyl or hydroxymethyl, R^{10} can also be amino or mono-lower-alkylamino,

an enantiomer or diastereomer thereof, or a physiologically compatible salt thereof, in an amount which is effective as an anti-diabetes mellitus agent.

29. A method for increasing the body protein content in a mammal, particularly in a fattening animal, comprising administering to said mammal a racemic compound of the formula

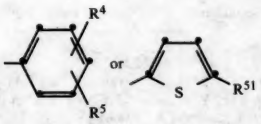


I

wherein n is an integer of 1 to 5; X^1 is a group of the formula:

X^2 is hydrogen, lower alkyl or a group of the formula:

Y is hydrogen, lower-alkyl, hydroxymethyl, carboxy or lower-alkoxycarbonyl; Z is a group of the formula:



R^1, R^2 and R^3 individually are hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, acylamino, lower-alkoxybenzylamino, nitro, carbamoyl, trifluoromethyl or lower-alkylsulphonyl-methyl; R^4, R^5 and R^{51} individually are hydrogen, lower-alkyl, lower alkoxy, lower-alkanoyl, carboxy, cyano, hydroxy, hydroxy-lower-alkyl, acyloxy, $-C(R^6)=C(R^7)COOR^8$, $-SO_2R^9$, $-C(O)R^9$ or $-CH_2R^{10}$, with the proviso that R^4 is not hydrogen when R^5 is hydroxy, lower-alkyl or lower-alkoxy; R^6, R^7, and R^8 individually are hydrogen or lower-alkyl; R^9 is amino, mono-lower-alkylamino or a group R; R is di-lower-alkylamino, piperidino, morpholino, thiamorpholino, piperazino, or the ether group of a lower aliphatic, cycloaliphatic or araliphatic alcohol or of phenol; and R^{10} is a group R and, when at least one of R^1, R^2 and R^3 is hydrogen, halogen, hydroxy, benzyloxy, lower-alkyl, lower-alkoxy, hydroxymethyl, amino, lower-alkoxybenzylamino or trifluoromethyl and simultaneously Y is hydrogen, lower-alkyl or hydroxymethyl, R^{10} can also be amino or mono-lower-alkylamino,

an enantiomer or diastereomer thereof, or a physiologically compatible salt thereof, in an effective body protein increasing amount.

4,585,797

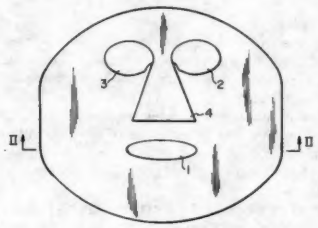
COSMETIC AND PHARMACEUTICAL SHEET MATERIAL CONTAINING POLYPEPTIDES

Gheorghe Cioca, Coatesville, Pa., assignor to Seton Company, Newark, N.J.

Continuation of Ser. No. 459,208, Jan. 19, 1983, abandoned, which is a continuation of Ser. No. 253,739, Apr. 13, 1981, abandoned. This application May 16, 1984, Ser. No. 610,621

Int. Cl.[4] A61K *9/70, 37/02*

U.S. Cl. 514—773 **8 Claims**



1. A flexible continuous film comprising a homogeneous physical admixture of:

a polypeptide selected from the group consisting of collagen, elastin and polypeptides derived from collagen and elastin and having a molecular weight of at least 2,000 to 20,000, wherein when said polypeptide is derived from collagen and elastin it is present at a level of 25 to 75 percent by weight based on the weight of the admixture and when said polypeptide is collagen or elastin it is present at a level of 3 to 5 percent by weight based on the weight of said admixture;

20 to 40 percent by weight of a water soluble non-volatile plasticizer having a boiling point in excess of about 150° C.; and

10 to 20 percent by weight of a film-forming polyvinyl alcohol which is soluble in hot water and insoluble in cold water;

said film, when moistened, will exude said polypeptide while remaining as a continuous film.

4,585,798

SYNTHESIS GAS CONVERSION USING RUTHENIUM-PROMOTED COBALT CATALYST

Harold Beuther, Vero Beach, Fla.; Thaddeus P. Kobylinski, Prospect, Pa.; Charles L. Kibby, Gibsonia, Pa., and Richard B. Pannell, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 310,969, Oct. 13, 1981, abandoned, and a continuation-in-part of Ser. No. 540,662, Oct. 11, 1983, Pat. No. 4,493,905, which is a division of Ser. No. 310,977, Oct. 13, 1981, Pat. No. 4,413,064. This application Jul. 30, 1984, Ser. No. 635,911

Int. Cl.[4] C07L *1/04*

U.S. Cl. 518—715 **18 Claims**

1. A process for the conversion of synthesis gas to a product containing liquid hydrocarbons, which comprises contacting a synthesis gas comprising hydrogen and carbon monoxide with an alumina supported cobalt-ruthenium catalyst containing from about 5 to about 30 weight percent cobalt and having a molar ratio of cobalt to ruthenium greater than about 200:1 and up to about 3400:1 under synthesis conversion conditions, said catalyst being prepared by contacting alumina with a non-aqueous, organic impregnation solution of a cobalt salt and a ruthenium salt.

4,585,799

CATALYST COMPOSITION, METHOD FOR ITS PRODUCTION AND ITS USE IN THE PRODUCTION OF HYDROCARBONS FROM SYNTHESIS GAS

George E. Morris, Egham; Barry Nay, Woking, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company P.L.C., London, England

Division of Ser. No. 512,740, Jul. 11, 1983, Pat. No. 4,542,117. This application Apr. 17, 1985, Ser. No. 724,062

Claims priority, application United Kingdom, Jul. 14, 1982, 8220421

Int. Cl.[4] C07C *1/04*

U.S. Cl. 518—717 8 Claims

1. A process for the production of aromatic hydrocarbons from synthesis gas which process comprises contacting synthesis gas at elevated temperature and either atmospheric or elevated pressure with

a catalyst composition which comprises the essential metals:

(a) ruthenium and at least one of iron, cobalt and nickel, and

(b) at least one of lithium, sodium, potassium, calcium and magnesium

supported on silicalite the metals [(a)+(b)] being present on the silicalite support in an amount in the range from 0.5 to 15% by weight, modified by combination with the hydrogen form of a crystalline zeolite having the composition expressed as mole ratios of oxides:

$0.9\pm0.2M_{2/n}O:W_2O_3:20$ to 50 $YO_2:zH_2O$ (I)

wherein M is at least one cation, n is the valence thereof, W is aluminium, or gallium, Y is silicon and/or germanium and z has a value of 0 to 40, said zeolite being characterised by an XRD pattern which is substantially that of an MFI-type zeolite.

4,585,800

PROCESS FOR PREPARING ANION EXCHANGE RESINS BY AMINATION OF HALOALKYLATED POLYMERS IN THE PRESENCE OF METAL HALIDE AND METAL HYDROXIDE

Sheldon H. Messing; Marylu B. Gibbs, and Alan C. Kott, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 23, 1984, Ser. No. 612,977

Int. Cl.[4] L08D *5/20*

U.S. Cl. 521—31 10 Claims

1. An improved process for producing anion exchange resins, said process comprising providing addition copolymer particles having haloalkylated functionalities and contacting said copolymer and a source of cations with an aminating compound capable of displacing the halogen of the haloalkyl functionality in a suitable reaction medium under reaction conditions suitable to provide an active anion exchange group and an ionizable electrolyte, wherein the source of cations is a metal hydroxide and ionizable electrolyte is a metal halide and wherein said reaction medium containing the ionizable electrolyte is further employed as the reaction medium in the production of anion exchange resins, as described hereinbefore.

4,585,801

RE-USE OF FLUOROPOLYMER MEMBRANES

Harry S. Burney, Jr., Clute, and Donald W. Calvin, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 29, 1982, Ser. No. 362,684

Int. Cl.[4] C08J *11/04*

U.S. Cl. 521—46 12 Claims

1. A method for salvaging, for reuse, used flurorpolymer membrane or sheet material from usage in electrochemical applications, said method comprising

folding, coiling, rolling, or stacking said material in a vessel suitable for the contacting of the said material with fluids, wherein

the said material is cleansed of soluble or leachable ingredients or contaminants by use of a solvent or chemical suitable therefor, and

wherein the material is cut into fibrous form after the cleansing action, and the fibrous material is pressed into a porous sheet form.

4,585,802

NITRO UREA BASED BLOWING AGENTS

Byron A. Hunter, Alpine, Utah; Donald G. Rowland, and Warren J. Peascoe, both of Woodbridge, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Division of Ser. No. 678,311, Dec. 5, 1984. This application Aug. 9, 1985, Ser. No. 764,267

Int. Cl.[4] C08J *9/10*

U.S. Cl. 521—92 2 Claims

1. A gas expandable composition comprising a gas expandable polymer and an effective amount of the blowing agent composition consisting of a mixture of nitro-urea and zinc oxide.

4,585,803

INTERNAL MOLD RELEASE COMPOSITIONS

Donald L. Nelson, Lake Jackson, Tex.; Roney J. Matijega, Midland, and Dennis P. Miller, deceased, late of Midland, both of Mich. (by Marilyn M. Miller, administrator), assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 17, 1984, Ser. No. 641,883

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—105 31 Claims

1. An internal mold release composition comprising (a) a metal salt of a carboxylic acid, amido carboxylic acid, phosphorus-containing acid or boron-containing acid wherein (i) the acid contains a lipophilic group which renders it incompatible with a polyahl and (ii) the metal is chosen from the metals in Groups IA, IB, IIA and IIB of the Periodic Table of the Elements, aluminum, chromium, molybdenum, iron, cobalt, nickel, tin, lead, antimony or bismuth and (b) a compatibilizing amount of a tertiary amine compound containing at least one tertiary nitrogen, which tertiary amine compound is a compatibilizer for the said metal salt in an active hydrogen-containing composition comprising said polyahl, but does not compatibilize the metal acid salt in a reacting mixture comprising said hydrogen-containing composition and a polyisocyanate.

4,585,804

RIGID FOAM WITH IMPROVED "K" FACTOR BY REACTING A POLYOL, A POLYISOCYANATE AND AT LEAST ONE COMPOUND HAVING AT LEAST ONE PRIMARY ALIPHATIC AMINE GROUP

Gerald M. Lancaster, Surfside; Robert B. Turner, and Llewellyn D. Booth, both of Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 549,960, Nov. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 316,245, Oct. 29, 1981, abandoned, which is a continuation-in-part of Ser. No. 247,468, Mar. 25, 1981, abandoned. This application Jan. 31, 1985, Ser. No. 697,418

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—128 15 Claims

1. In a process for preparing a rigid foam by reacting a mixture containing (A) a polyol compound or mixture of polyol compounds containing a plurality of hydroxyl groups with (B) a compound or mixture of compounds containing a plurality of NCO and/or NCS groups each said polyol and compound containing NCO and/or NCS groups being of sufficient functionality, equivalent weight and quantity so as to result in a rigid foam in the presence of (C) at least one foaming agent and (D) at least one catalyst; the improvement which comprises incorporating into said reaction mixture (E) at least one compound having at least one primary aliphatic amine group and having an average molecular weight of from about 60 to about 200 in an amount which provides a ratio of ali-

phatic amine hydrogen equivalents to hydroxyl equivalents of from about 0.025:1 to about 0.25:1 so as to improve at least one of the properties of the resultant foam selected from K-factor, dimensional stability and expansion at demold.

4,585,805

POLYAMIDE-IMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 E. Lexington Pl., El Cajon, Calif. 92021

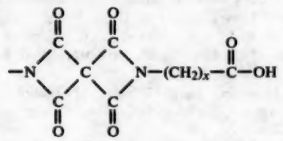
Division of Ser. No. 744,419, Jun. 13, 1985. This application Sep. 23, 1985, Ser. No. 768,064

Int. Cl.[4] C08J 9/12

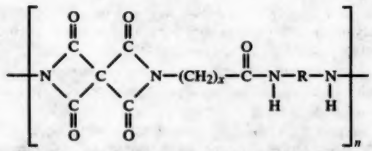
U.S. Cl. 521—129 **14 Claims**

1. The process for preparing a polyamide-imide foam composition which comprises the steps of:

providing a cyclic tetracarboxylic acid containing a functional imido group and having the formula



reacting said compound with a di-isocyanate to produce a polyamide-imide and having the recurring units:



wherein "n" is a positive integer, "R" is a radical selected from the group consisting of alkyline and phenylene radicals, which may have alkyl or aryl substituted and "X" is an integer from 1 to 6.

mixing therewith from about 1% to 3% of a tertiary amine based on the diisocyanate,

adding thereto and mixing from about 1.0 to 5.0 parts by weight of an organic diisocyanate per part of the imidocarboxylic acid, and

adding thereto and mixing from about 2 to 8 weight % water, based on the imidocarboxylic acid.

4,585,806

FLAME RETARDANT, SELF-EXTINGUISHING POLYURETHANES AND POLYURETHANE FOAMS

Henry J. Barda, North Brunswick, N.J., assignor to Ethyl Corporation, Richmond, Va.

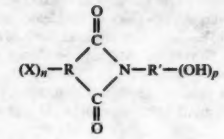
Continuation-in-part of Ser. No. 303,055, Sep. 17, 1981, abandoned. This application Dec. 12, 1984, Ser. No. 680,928

Int. Cl.[4] C08G 18/14, 18/28, 18/77

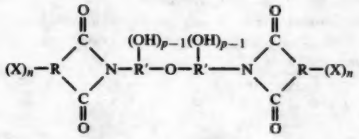
U.S. Cl. 521—166 **6 Claims**

3. A polyurethane foam made by the process of reacting a mixture comprising

(a) a reactive fire retardant mixture comprising about 1-99 weight percent of a halogenated imide-containing polyol having the formula:



and about 99-1 weight percent of the corresponding ether having the formula:



wherein R is a hydrocarbon group having the valence n+2 and is selected from the group consisting of benzene groups, naphthalene groups and alicyclic hydrocarbon groups containing 5 to 10 carbon atoms, R′ is an aliphatic hydrocarbon group containing 3–12 carbon atoms, X is selected from the group consisting of bromine and chlorine, n is an integer from 1–6 and p is an integer from 2–6.

(b) a non-halogenated polyol,

(c) a polyisocyanate,

(d) a catalyst,

(e) a blowing agent and

(f) a surfactant.

4,585,807

RIGID POLYURETHANE FOAMS EMPLOYING OXYALKYLATED ETHYLENEDIAMINE

Donald L. Christman, Grosse Ile, Mich., assignor to BASF Corporation, Wyandotte, Mich.

Filed Jan. 14, 1985, Ser. No. 691,511

Int. Cl.[4] C08G 18/14

U.S. Cl. 521—167 **6 Claims**

1. A rigid polyurethane foam comprising the reaction product of

(a) a polyoxyalkylene polyether polyol consisting of a propylene oxide adduct of sucrose and propylene glycol,

(b) an ethylene oxide and/or propylene oxide adduct of ethylenediamine having a molecular weight range from about 200 to about 500,

(c) catalyst, surfactant and blowing agent, and

(d) polymethylene polyphenylene polyisocyanate.

4,585,808

MONOMER REMOVAL FROM A POLYMER

Patrick J. Reilly, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 4, 1982, Ser. No. 345,854

Int. Cl.[4] C08F 6/10, 2/54

U.S. Cl. 522—116 **6 Claims**

1. A method of reducing the monomer content of a polymer or polymerization media comprising adding to the media a chemical agent selected from the class consisting of acrylates, hydrocarbon olefins and diolefins to form a mixture and then subjecting the mixture of the polymer containing the monomer to sufficient irradiation with a high energy radiation to polymerize said monomer.

4,585,809

RESIN BINDERS FOR FOUNDRY MOLDING SANDS

Heinz-Jochen Auer, Gross-Gerau; Wolfgang Klesse, Mainz; Peter Quis, and Walther W. Szubinski, both of Darmstadt, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 10, 1984, Ser. No. 579,148

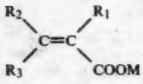
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305361

Int. Cl.[4] C08K *3/36*; C09K *3/00*

U.S. Cl. 523—139 **17 Claims**

1. A ready-to-use foundry molding sand composition which is a mixture of sand and such an amount of an aqueous dispersion containing from 10 to 60 percent by weight of a water insoluble synthetic resin copolymer that said mixture contains from 0.1 to 10 percent by weight of said copolymer, said copolymer comprising

(A) from 20 to 90 percent by weight of an unsaturated carboxylic acid of the formula



wherein R_1, R_2 and R_3 are independently hydrogen, alkyl having from 1 to 6 carbon atoms, or $-(CH_2)_n-COOM$, where M is a proton or an alkali metal or alkaline earth metal or an ammonium cation, and n is 0 or 1, but where no more than two —COOM groups are present in the acid molecule and where those groups —COOM wherein M is an alkali metal or alkaline earth metal cation are not more than 20 percent by weight of all —COOM groups present in said copolymer; and

(B) from 10 to 80 percent by weight of at least one monomer different from and copolymerizable with (A).

4,585,810

DRAG REDUCTION AGENT

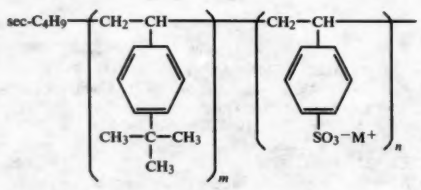
Jan Bock; Ralph M. Kowalik, both of Bridgewater, and Paul L. Valint, Asbury, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 454,279, Dec. 29, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,669

Int. Cl.[4] B05D *5/08*

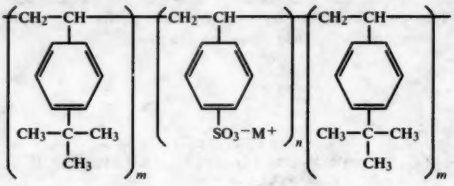
U.S. Cl. 523—175 **2 Claims**

1. A method for reducing the frictional drag of aqueous solution in flow through pipes or conducts having a continuous bore therethrough which comprises adding about 10 to about 1000 ppms of a water soluble sulfonated diblock or triblock polymer to said aqueous solution, said diblock polymer having the formula:



wherein m is about 0.5 to about 15 mole %, n is about 85.0 to about 99.5 mole %, and M is selected from the group consisting of metal ions of iron, aluminum, lead, and Groups IA, IIA, IB and IIB of the Periodic Table of Elements, and

said triblock polymer having the formula:



wherein m is about 0.25 to about 7.5 mole %, n is about 85 to about 99.5 mole % and M is selected from the group consisting of iron, aluminum, lead and Groups IA, IIA, IB and IIB of the Periodic Table of Elements.

4,585,811

REINFORCING AGENTS FOR ELASTOMERS, THE PRODUCTION OF REINFORCED ELASTOMERS AND REINFORCED ELASTOMERS

Lothar Preis, Bergisch-Gladbach; Rudolf Schmidt, Burscheid; Josef Esser, Leverkusen, and Hans Magg, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Jul. 31, 1984, Ser. No. 636,295

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3329127

Int. Cl.[4] C08L *7/00, 9/00*; C08K *7/02, 7/04*

U.S. Cl. 523—206 **7 Claims**

1. Reinforcing elements comprising a reinforcing fiber impregnated with a reactive resin and coated with an adhesion promoting system wherein

said reinforcing fiber is a fiber comprising glass, polyester, polyamide, aramide, rayon, polyvinyl alcohol, carbon or metal;

said reactive resin is an unsaturated polyester resin, an epoxy resin, phenolic resin, a polyurethane resin, a polyimide resins or a cyanate resin; and

said adhesion promoting system containing (i) a rubber which is natural rubber, polyisoprene, styrene butadiene rubber, polychloroprene or nitrile rubber, and (ii) a polyisocyanate wherein the weight ratio of rubber:isocyanate is from 1:0.2 to 1:3.

5. Process for the production of reinforced elastomers, comprising vulcanizing an intimate mixture of reinforcing elements according to claim 1 and an elastomer which is natural rubber, polychloroprene, polyisoprene, styrene-butadiene rubber, or chlorinated polyethylene.

4,585,812

POLYMERIC DISPERSIONS

John R. Field, West Yorkshire, Great Britain, assignor to Allied Colloids Limited, England

Filed Feb. 11, 1985, Ser. No. 699,988

Claims priority, application United Kingdom, Feb. 17, 1984, 8404203; Nov. 19, 1984, 8429215

Int. Cl.[4] C08J *3/02*

U.S. Cl. 523—221 **18 Claims**

1. A liquid, substantially stable, pumpable composition comprising a dispersion of substantially anhydrous particles of water soluble or water swellable polymer in a non-aqueous liquid wherein the amount of particles is at least 70% by weight of the dispersion and the particles consist of 1 part by weight fine particles having a particle size below 3 microns and about 0.1 to 7 parts by weight coarse particles having a particle size of 10 to 300 microns with substantially no particles above 300 microns.

4,585,813

AQUEOUS COATING COMPOSITION COMPRISING SELF-EMULSIFIABLE ESTER OF EPOXY AND ACID CONTAINING ADDITION POLYMER AND METHOD OF ITS PREPARATION

George L. Brown, Scotch Plains, N.J.; Miksa de Sorgo, McMurray, Pa., and Arthur T. Spencer, New Providence, N.J., assignors to SCM Corporation, New York, N.Y.

Continuation of Ser. No. 221,641, Dec. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 95,738, Nov. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,471, Jun. 12, 1978, abandoned. This application Mar. 10, 1983, Ser. No. 472,206

The portion of the term of this patent subsequent to Nov. 13, 2001, has been disclaimed.

Int. Cl.[4] C08K *3/20;* C08G *59/00*

U.S. Cl. 523—409 2 Claims

1. A method of esterifying a solvent-soluble carboxyl-functional polymer with an epoxy resin which is a mixture comprising aromatic polyethers containing oxirane functionality, at least 5% of said aromatic polyethers being constituted by diepoxide, said mixture of aromatic polyethers constituting at least about 40% of the total resin solids content and providing oxirane functionality in a stoichiometric deficiency with respect to carboxyl functionality in said carboxyl-functional polymer of from 1:2 to 1:20, said esterification being carried out in organic solvent medium in the presence of at least about 3% amine, based on the weight of the reactants subjected to esterification, of an amine esterification catalyst and at an elevated temperature appropriate to cause said oxirane functionality to react with said carboxyl functionality until said oxirane functionality is substantially entirely consumed to produce an epoxy resin-carboxyl polymer ester; and

providing a colloidal dispersion of said epoxy resin-carboxyl polymer ester in an organic solvent medium.

2. A colloidal dispersion as recited in claim 1 (56) in which said carboxyl-functional polymer is a solution copolymer of monoethylenically unsaturated monomers comprising from 30% to 70% by weight of methacrylic acid.

4,585,814

EPOXY-MALEATE-PHOSPHATE COPOLYMERS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 14, 1984, Ser. No. 609,798

Int. Cl.[4] C08L *63/10, 63/02;* C08G *59/14, 59/16*

U.S. Cl. 523—416 20 Claims

1. A solution copolymer of monoethylenically unsaturated monomers including a proportion of monoethylenically unsaturated carboxylic acid, with an oxirane-free epoxy acid ester phosphate having adducted onto the oxirane groups of a starting polyepoxide at least 10% thereof of ortho phosphoric acid as well as at least 0.5% by weight of a monoester of a saturated monohydric alcohol with a monoethylenically unsaturated dicarboxylic acid which resists homopolymerization, the remaining oxirane groups of said polyepoxide being esterified with monocarboxylic acid, etherified with monoalcohol or hydrolyzed with water.

14. An aqueous coating composition comprising the solution copolymer of claim 1 dispersed in water with the aid of a volatile amine.

4,585,815

STENCIL PRINTING INK

Yoshiaki Ono, and Takeshi Teranishi, both of Aichi, Japan, assignors to Pilot Ink Co., Ltd., Aichi, Japan

Filed Dec. 12, 1983, Ser. No. 560,303

Claims priority, application Japan, Dec. 10, 1982, 57-217376

Int. Cl.[4] C09D *11/14, 11/10*

U.S. Cl. 524—23 12 Claims

1. A stencil printing ink containing, as essential components, and not containing titanium dioxide, 0.5 to 20% by weight of a pigment selected from the group consisting of a carbon black pigment and an organic pigment, 5 to 30% by weight of an extender being substantially colorless and transparent and having a particle size of not more than 10 μm and acting to impart dilatent flow properties to ink, 0.5 to 5% by weight of a water-soluble polymer having a viscosity (as determined as a 10% aqueous solution at 20° C.) of at least 40 centipoises, 3 to 15% by weight (as calculated as solids) of an o/w resin emulsion 5 to 20% by weight of a polyhydric alcohol selected from the group consisting of ethylene glycol, propylene glycol, diethylene glycol, glycerin and thiodiethylene glycol, and the remainder water, the percentages by weight of said components being based on the weight of the entire ink composition.

3. A stencil printing ink as claimed in claim 1, wherein the water-soluble polymer is a cellulose derivative, a gum, a synthetic polymer, an alginic acid derivative, a protein, or a starch.

8. A stencil printing ink as claimed in claim 3, wherein the protein is gelatin or casein.

11. A stencil printing ink as claimed in claim 1, wherein the o/w resin emulsion is an emulsion of resin comprising polyvinyl acetate, an ethylene-vinyl acetate copolymer, polyacrylate, polymethacrylate, a styrene-acrylate copolymer, a vinyl acetate-acrylate copolymer, polyvinyl chloride, a vinyl chloride-vinyl acetate copolymer or a styrene-butadiene copolymer.

4,585,816

ASPHALT-BLOCK COPOLYMER ARTICLES AND METHOD FOR THE PREPARATION THEREOF

John F. Vitkuske, and Lu H. Tung, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 2, 1985, Ser. No. 751,152

Int. Cl.[4] C08J *3/20;* C08L *53/02, 95/00*

U.S. Cl. 524—68 8 Claims

1. A method for the preparation of a mixture of a block copolymer of $AB(BA)_n$ configuration wherein n is an integer of from 1 to 10 and asphalt comprising: providing a solution of the block copolymer in a solvent, said solvent being suitable for lithium initiated polymerization of alkenyl aromatic monomer and diene monomer, said solution being that obtained from the polymerization of the A and B blocks to prepare the $AB(BA)_n$ copolymer in solution in said solvent, mixing the solution of polymer with a liquid asphalt to provide a generally homogenous solution of asphalt and block copolymer in the solvent; subsequently removing the solvent to provide an asphalt-block copolymer blend, shaping the resultant blend into a desired configuration, wherein the blend contains from about 1 part of asphalt to about 10 parts of copolymer to about 40 parts of asphalt to about 10 parts of copolymer, wherein said block B is a diene and block A is a vinyl aromatic, and wherein the B block comprises from about 50 to 90 weight percent and the A block ranges from 10 to about 50 weight percent of the block copolymer.

4,585,817

CRYSTALLIZABLE POLYOLEFIN COMPOSITION HAVING INCREASED CRYSTALLIZATION TEMPERATURE AND RATE OF CRYSTALLIZATION

Tien-Kuei Su, Pittsford, and Norman R. Youngjohn, Macedon, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

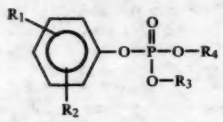
Filed Jun. 11, 1984, Ser. No. 619,511

Int. Cl.[4] C08K *5/06*

U.S. Cl. 524—108 9 Claims

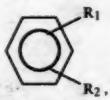
1. A crystallizable polyolefin polymer composition comprising a polyolefin selected from the group consisting of linear low density polyethylene and copolymers of ethylene with at least one alpha-olefin containing 3 to 8 carbon atoms, about 0.1 to about 20% by weight of polypropylene and a nucleating

compound selected from the group consiting of dibenzylidene sorbitol and a phenyl phosphate compound of the formula



in which R_1 and R_2 are independently selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 18 carbon atoms, an alkoxy group having 1 to 18 carbon atoms, a cycloalkyl group having 5 to 12 carbon atoms, a phenyl group, a phenoxy group, and a group

in which R_5 is a hydrogen atom or an alkyl group having 1 to 18 carbon atoms; R_3 is selected from the group consisting of an alkyl group having 1 to 18 carbon atoms,



, and R_4; and R_4 is a hydrogen atom or a metal atom equivalent $M_{1/a}$ where a is the valence of the metal atom M, wherein said dibenzylidene sorbitol is present in an amount of about 0.05 to about 1.5% by weight and the phosphate compound is present in an amount of about 0.05 to about 2% by weight, all percentages being based on the weight of the total composition, said composition having a higher crystallization temperature and rate of crystallization than the composition containing only said olefin polymer or said olefin polymer containing only polypropylene or only said nucleating compound.

4,585,818

FLAME RETARDANT POLYMETHYL METHACRYLATE MOLDING COMPOUND

Karl A. Jüng, Ober-Ramstadt; Karl-Heinz Jakob, Lampertheim; Manfred Munzer, Bensheim, and Wilhelm Wopker, Bickenbach, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

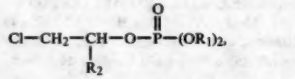
Filed Mar. 19, 1984, Ser. No. 591,181

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311832

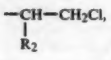
Int. Cl.[4] C08K *5/50, 5/52, 3/20, 5/34*

U.S. Cl. 524—120 **10 Claims**

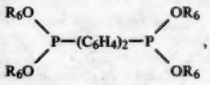
1. A flame-retardant molding compound comprising a polymer of methyl methacrylate having an average molecular weight between 1×10^5 and 2×10^5, from 8 to 15 percent by weight of a first additive which is at least one chloroalkylphosphoric acid ester of the formula



wherein R_1 is alkyl having from 1 to 4 carbon atoms or



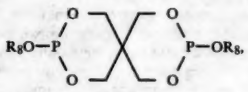
and R_2 is hydrogen, methyl, ethyl, or chloro-substituted methyl or ethyl, and from 0.05 to 2 percent by weight of a second additive which is a sterically hindered phenol or of an ester of trivalent phosphorus, said ester having the formula



wherein R_6 is the same or different alkyl or alkylphenyl having 14 to 24 carbon atoms,

$$P(OR_7)_3,$$

wherein R_7 is the same or different alkylphenyl having 14 to 24 carbon atoms, or



wherein R_8 is the same or different alkyl or alkylphenyl having 14 to 24 carbon atoms.

4,585,819

FUSION ADHESIVE WHICH CAN COMPRISE AN ISOCYANATE PREPOLYMER, A THERMOPLASTIC POLYMER AND/OR A LOWER MOLECULAR WEIGHT KETONE RESIN

Ferdinand Reischle; Jochen Windhoff, and Walter Bernig, all of Munich, Fed. Rep. of Germany, assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Aug. 14, 1984, Ser. No. 640,709

Int. Cl.[4] C08L *75/00*

U.S. Cl. 524—196 **21 Claims**

1. A fusion adhesive which comprises 20–90 percent by weight isocyanate prepolymer, and 5–50 percent by weight lower molecular weight synthetic resin selected from the group consisting of ketone resins, hydrogenated products of acetophenone condensation resins, and mixtures thereof.

4,585,820

MIXTURES OF A POLYACRYLIC ACID AND A COPOLYMER OF ACRYLIC ACID AND ACRYLAMIDE AS THICKENERS IN PRINTING PASTES FOR DYEING AND PRINTING FIBRE MATERIAL

Raymond Défago, Riehen, Switzerland, and Wolfgang Sütterlin, Lörrach-Haagen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 430,640, Sep. 30, 1982, abandoned. This application May 30, 1985, Ser. No. 739,498

Claims priority, application Switzerland, Oct. 9, 1981, 6477/81

Int. Cl.[4] C08L *33/00, 33/26;* **C09D** *7/00*

U.S. Cl. 524—232 **4 Claims**

1. A thickener composition which contains

(A) a crosslinked copolymer of acrylic acid and acrylamide having a molar ratio of acrylic acid to acrylamide of 1:0.9 to 1:1.1 and a molecular weight of 1.10^6 to 6.10^6, and

(B) a polyacrylic acid having a molecular weight of $6\cdot10^5$ to $1\cdot10^6$,

the weight ratio of (A):(B) being 0.15:1 to 30:1.

4,585,821

ELASTOMER FORMING COMPOSITIONS

Eric R. Progneaux, Brussels, and Brian R. Trego, Vossem, both of Belgium, assignors to Dow Corning Ltd., Barry, Wales and Dow Corning S.A., Seneffe, Belgium

Filed May 20, 1985, Ser. No. 736,193

Claims priority, application United Kingdom, May 30, 1984, 8413777

Int. Cl.[4] C08K *3/26*

U.S. Cl. 524—425 7 Claims

1. A composition curable to an elastomer in the presence of moisture and comprising the product obtained by mixing (A) 100 parts by weight of a polydiorganosiloxane having terminal silanol groups, a viscosity in the range from 5×10^{-4} to 10^{-1} m^2/s and wherein at least 70 percent of the total organic substituents are methyl groups, any remaining organic substituents being selected from phenyl, vinyl and fluoroalkyl groups; (B) from 0.5 to 15 parts by weight of an alkoxysilane represented by the general formula $R_aSi(OR')_{4-a}$ wherein R represents a monovalent substituent selected from hydrocarbon groups and halogenated hydrocarbon groups each having from 1 to 6 inclusive carbon atoms, R' represents an alkyl group having from 1 to 4 inclusive carbon atoms and a is 0 or 1: (C) from 0.1 to 10 parts by weight of an organic titanium catalyst having organic groups attached to titanium through TiOC linkages; (D) from 3 to 20 parts by weight of a reinforcing or semi reinforcing filler and (E) from 5 to 30 parts by weight of a polydiorganosiloxane gum having a plasticity number in the range from 100 to 200 as measured according to ASTM Test No. D926-67, and wherein at least 80 percent of the organic substituents are methyl groups, any remaining substituents being selected from phenyl groups and vinyl groups.

4,585,822

THERMALLY CONDUCTIVE ROOM TEMPERATURE VULCANIZABLE COMPOSITIONS

Marie J. Streusand, Saline, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Oct. 29, 1984, Ser. No. 665,469

Int. Cl.[4] C08K *3/28*

U.S. Cl. 524—443 11 Claims

1. A thermally conductive room temperature vulcanizable organopolysiloxane composition comprising a hydroxyl-terminated organopolysiloxane, from 0.5 to 20 percent by weight based on the weight of the organopolysiloxane of a crosslinking agent selected from the group consisting of polyalkoxysilanes and polyalkoxysiloxanes, a condensation catalyst and from 30 to 95 percent by weight of filler based on the weight of the composition of which from about 30 to 100 percent by weight based on the weight of the filler is silicon nitride particles.

4,585,823

OVENWARE MOLDED FROM WHOLLY AROMATIC POLYESTER COMPOSITION

Teruo Saito, Kusatsu; Kuniaki Asai, Tondabayashi, and Tadayasu Kobayashi, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

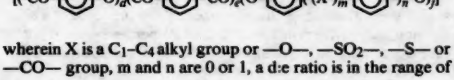
Filed May 30, 1985, Ser. No. 739,163

Claims priority, application Japan, Jun. 13, 1984, 59-121522

Int. Cl.[4] C08K *3/22, 3/34*

U.S. Cl. 524—456 1 Claim

1. Ovenware produced by molding a wholly aromatic polyester resin composition comprising 30 to 80 wt. % of a wholly aromatic polyester having a repeating unit represented by the general formula,



wherein X is a C_1–C_4 alkyl group or —O—, —SO_2—, —S— or —CO— group, m and n are 0 or 1, a d:e ratio is in the range of from 1:1 to 10:1, an e:f ratio is in the range of from 9:10 to 10:9, and the positions of substituents at each aromatic ring of the foregoing general formula are para or meta to each other, 5 to 60 wt. % of wollastonite and 5 to 60 wt. % of titanium oxide.

4,585,824

GLASS FIBER-REINFORCED HEAT RESISTANT RESIN COMPOSITION

Minoru Uchida, Yokkaichi, and Sadao Ikuma, Suzuka, both of Japan, assignors to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,050

Int. Cl.[4] C08K *3/40, 7/14;* C08J *5/08*

U.S. Cl. 524—494 12 Claims

1. A glass fiber-reinforced heat resistant resin composition which comprises:

from 5–90% by weight of a pelletized polymer (A) obtained by suspension-polymerizing a vinyl aromatic monomer, in the presence of chopped glass fiber strands, and comprising from 50 to 90% by weight of the chopped glass fiber strands and from 50 to 10% by weight of a resin component consisting essentially of from 40 to 100% of residues of the vinyl aromatic monomer;

from 95 to 10% by weight of a polymer (B) comprising from 10 to 50% of residues of a maleimide monomer, and from 90 to 50% of residues of a vinyl aromatic monomer;

from 15 to 50% by weight of a polymer (C) comprising from 40 to 100% of residues of a vinyl aromatic monomer; and

from 0 to 50% by weight of a copolymer (D) obtained by graft-copolymerizing a vinyl aromatic monomer, to a rubber, and comprising from 5 to 70% by weight of the rubber and from 30 to 95% by weight of a resin component consisting essentially of from 40 to 100% of residues of the vinyl aromatic monomer.

4,585,825

MONOVINYLIDENE AROMATIC POLYMER RESINS HAVING ADDED AMOUNTS OF HIGH MOLECULAR WEIGHT POLYMER

Mark A. Wesselmann, Chino, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 537,993, Sep. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 431,904, Sep. 30, 1982, abandoned. This application Mar. 8, 1985, Ser. No. 709,855

Int. Cl.[4] C08L *25/06, 51/04, 55/02*

U.S. Cl. 524—504 21 Claims

1. A monovinylidene aromatic polymer composition comprising:

(a) from about 65 to about 98 parts by weight of intermediate molecular weight monovinylidene aromatic polymer having a weight average molecular weight (Mw) of from about 5.2 to 12.6 times the entanglement molecular weight and a weight average molecular weight to number average molecular weight (Mn) ratio (Mw/Mn) of from about 1 to about 3;

(b) from about 2 to about 35 parts by weight of high molecular weight monovinylidene aromatic polymer having a weight average molecular weight of from about 26.2 to 99.5 times the entanglement molecular weight and a Mw/Mn of from about 1 to about 3; in which composition the molecular weight of polymers having a Mw of up to 700,000 is determined by gel permeation chromatography and the molecular weight of polymers having a Mw of greater than 700,000 is determined by solution viscosity; and

(c) less than about 0.5 percent by weight based on the combined weight of (a) and (b) of a plasticizer.

4,585,826

NATURAL RUBBER CONTAINING COMPOSITIONS WITH INCREASED TEAR STRENGTH

Daniel F. Graves, Clinton, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jan. 28, 1985, Ser. No. 695,651
Int. Cl.[4] C08K *3/04, 3/36*
U.S. Cl. 524—534 **13 Claims**

1. A curable but uncured elastomeric composition, said composition comprising

(a) 100 parts by weight polymer consisting of

(i) from about 95 to about 25 parts by weight of natural rubber,

(ii) from 0 to about 65 parts by weight of synthetic rubber,

(iii) from about 5 to about 25 parts by weight of liquid carboxy-terminated butadiene-acrylonitrile copolymer having a functionality ranging from about 1.5 to about 2.5, an acrylonitrile content ranging from about 10% to about 40% by weight and a Brookfield viscosity at 27° C. ranging from about 50,000 to about 200,000 centipoise,

(b) from about 30 to about 120 parts by weight of reinforcing filler.

4,585,827

LOW FORMALDEHYDE RELEASE REACTANT

Kenneth H. Remley, Charlotte, N.C., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jul. 13, 1984, Ser. No. 630,488
Int. Cl.[4] C08L *61/22*
U.S. Cl. 524—598 **3 Claims**

1. An improved method for making textile finishing agent comprising the steps of

mixing glyoxal, formaldehyde, urea and a glycol and reacting the mixture at temperature in the range from about 40° C. to about 80° C. and at pH in the range from 6 to 7 for time sufficient to complete the reaction and then

changing the pH of the product mixture and further reacting at temperature in the range from about 40° C. to about 80° C. and at pH in the range from 3.5 to about 1.0 for time sufficient to complete the reaction and then adjusting the pH of the product mixture to pH in the range from pH 4.5 to 5.5.

4,585,828

EMULSIFIABLE RADIATION-CURABLE ACRYLOYL-CONTAINING POLYESTERS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Jürgen Meixner, Krefeld; Hans-Joachim Traenckner, Fallingbostel; Wolfgang Kremer, Kerken, and Manfred Müller, Erkelenz, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1984, Ser. No. 665,566
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1983, 2340589
Int. Cl.[4] C08L *67/06;* **C08G** *63/20*
U.S. Cl. 524—604 **9 Claims**

5. An acryloyl-containing polyester having an acid number of 1–50 mg of KOH/g of substance comprising cocondensed units of

(A) 1.0 mole of at least one dicarboxylic anhydride,

(B) 0.02–0.08 mole of at least one saturated dihydric polyether alcohol having a molecular weight $\overline{Mn}$ of about 1,000 to 2,000,

(C) 0.48–0.42 mole of at least one dihydric saturated alcohol,

(D) 0.5 to 1.0 mole of at least one trihydric saturated oxyalkylated alcohol with a degree of oxyalkylation of 2–6 and 0.5 to 0 mole of a trihydric saturated non-oxyalkylated alcohol and

(E) 1.0–2.0 moles of acrylic acid, prepared by the steps comprising heating said components (A), (B) and (C) at temperatures of 75° C. to 130° C. in a water-insoluble solvent under nitrogen for three to eight hours, then, in a second stage, adding said components (D) and (E) simultaneously or in succession and heating the resulting mixture at temperatures of 75° C. to 130° C. in the presence of an acid catalyst and of an inhibitor under azeotropic conditions until no more water separates off and the remaining solvent begins to distil over.

9. An aqueous emulsion containing an acryloyl-containing radiation-curable polyester as claimed in claim 5.

4,585,829

INTERNAL MOLD RELEASE FOR REACTION INJECTION MOLDED POLYURETHANES

An-Li Kuo, Chappaqua, N.Y.; Errol D. Goddard, Haworth, N.J., and James S. Ritscher, Ossining, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 537,946, Sep. 30, 1983, abandoned. This application May 29, 1984, Ser. No. 614,712
Int. Cl.[4] C08L *75/04*
U.S. Cl. 524—714 **32 Claims**

1. In a composition curable to a polyurethane in a mold, said composition comprising: (a) a polymer/polyol, (b) an organic polyisocyanate and (c) a catalytic amount of catalyst for the reaction of (a) and (b) to produce the polyurethane, the improvement which comprises imparting to the polyurethane produced from the composition the property of self release from the mold by including in said composition a perfluoroalkylorganocarboxylic acid or salt thereof wherein the organo group (i) is a divalent group that links the perfluoroalkyl group to the carboxylic acid or carboxylic salt group and (ii) has at least 2 successive atoms between the two atoms having the valences of the organo group.

4,585,830

POLYORGANOSILOXANE COMPOSITIONS USEFUL FOR PREPARING UNSUPPORTED EXTRUDED PROFILES

Randall P. Sweet, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed May 20, 1985, Ser. No. 736,194
Int. Cl.[4] C08K *3/36*
U.S. Cl. 524—862 **11 Claims**

1. A pumpable organosiloxane composition having the consistency of petrolatum at 25° C. and the capability of being extruded as unsupported profiles that retain their initial shape during curing at temperatures of at least 70° C., said composition comprising the product obtained by blending

(A) a triorganosiloxy-endblocked polydiorganosiloxane containing at least two vinyl radicals per molecule and exhibiting a viscosity of 0.1 to 100 Pa.s at 25° C., wherein at least 50% of the silicon-bonded hydrocarbon groups are methyl;

(B) an organohydrogensiloxane containing at least two silicon-bonded hydrogen atoms per molecule, where said hydrogen atoms are bonded to different silicon atoms and the amount of (B) is sufficient to cure said composition, with the proviso that the sum of the average number of vinyl radicals per molecule of (A) and the average number of silicon-bonded hydrogen atoms per molecule of (B) is at least five;

(C) a platinum-containing hydrosilation catalyst in an amount sufficient to promote curing of said composition;

(D) optionally, an amount of catalyst inhibitor sufficient to render (C) inactive at temperatures up to 70° C.;

(E) a finely divided silica filler in an amount sufficient to impart the consistency of petrolatum to said composition; and

(F) a silica treating agent in an amount sufficient to inhibit crepe hardening of said composition,

said composition being characterized by the presence of a silica treating agent wherein from 20 to 100 percent by weight of said treating agent is immiscible with said polydiorganosiloxane (A) at 25° C.

4,585,831

EPOXY-MODIFIED POLYOLS AND POLYMER-POLYOLS USEFUL IN THE PREPARATION OF IMPROVED PLASTICS INCLUDING POLYURETHANE FOAMS, ELASTOMERS AND THE LIKE

Paul Stamberger, Baltimore, Md., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 501,608, Jun. 6, 1983, Pat. No. 4,495,341, which is a continuation-in-part of Ser. No. 279,318, Jul. 1, 1981. This application Oct. 17, 1984, Ser. No. 661,611

Int. Cl.[4] C08G 59/00

U.S. Cl. 525—31 3 Claims

1. A stable polymer-polyol comprising the reaction product of:

(a) a polyol having an average molecular weight of at least about 500, that is essentially free of ethylenic unsaturation,

(b) an epoxy co-reactant that is essentially free of ethylenic unsaturation, and

(c) at least one ethylenically unsaturated monomer which is reactive with free hydroxyl groups of said polyol and said epoxy co-reactant by free radical addition polymerization to a substantially linear polymer having a molecular weight of at least 5000

wherein said polyol acts as a dispersing medium for the linear polymer, is liquid at the reaction temperature and has at least two radicals which are reactive with the —N=C=O of a polyisocyanate.

4,585,832

WEATHER AND IMPACT RESISTANT RESIN COMPOSITION AND PROCESS FOR ITS PREPARATION

Takashi Kokubo, Suzuka, Japan, assignor to Mitsubishi Monsanto Chemical Company, Tokyo, Japan

Filed Jun. 14, 1984, Ser. No. 620,710

Claims priority, application Japan, Jun. 23, 1983, 58-113511; Oct. 14, 1983, 58-192214; Nov. 30, 1983, 58-225784

Int. Cl.[4] C08L 5/04

U.S. Cl. 525—71 6 Claims

1. A weather and impact resistant resin composition which comprises a mixture of copolymers (A), (B) and (C), wherein

graft copolymer (A) is composed of

I. a continuous phase comprising a monomeric mixture of

(a) from 10 to 90% by weight of residues of an aromatic vinyl monomer,

(b) from 10 to 40% by weight of residues of an α,β—unsaturated nitrile monomer, and

(c) from 0 to 80% by weight of residues of methyl methacrylate, and

II. particles of an acrylate rubber having a weight average particle size of from 0.1 to 0.45 μm dispersed in the continuous phase said acrylate rubber comprising

(1) from 70 to 98% by weight of residues of an alkyl acrylate having from 2 to 12 carbon atoms,

(2) from 1.92 to 27% by weight of residues of a vinyl monomer copolymerizable with the alkyl acrylate, and

(3) from 0.08 to 3% by weight of residues of a multifunctional vinyl monomer,

graft copolymer A being prepared by polymerizing said monomeric mixture in the presence of said acrylate rubber;

graft copolymer (B) composed of

I. a continuous phase comprising a monomeric mixture of

(a) from 10 to 90% by weight of residues of an aromatic vinyl momomer,

(b) from 10 to 40% by weight of residues of an α,β-unsaturated nitrile monomer, and

(c) from 0 to 80% by weight of residues of methyl methacrylate, and

II. particles of a diene rubber having a weight average particle size of from 0.5 to 5 μm dispered in the continuous phase;

graft copolymer B being prepared by polymerizing said monomeric mixture in the presence of said diene rubber; and

copolymer (C) comprises

(a) from 10 to 90% by weight of residues of an aromatic vinyl monomer,

(b) from 10 to 40% by weight of residues of an α,β-unsaturated nitrile monomer, and

(c) from 0 to 80% by weight of residues of methyl methacrylate; the content of the total rubber particles in said mixture being from 5 to 40% by weight.

4,585,833

LOW SHRINKLING CURABLE POLY(ACRYLATE) MOLDING COMPOSITIONS

Linda A. Domeier, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

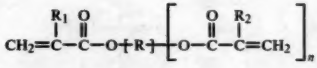
Filed May 26, 1983, Ser. No. 498,577

Int. Cl.[4] C08F 4/04, 4/34, 4/38

U.S. Cl. 525—260 15 Claims

1. A curable molding composition having improved shrinkage control useful for the rapid cure rate, injection molding of fiber reinforced thermoset resin articles, comprising a mixture of:

(a) a poly(acrylate) characterized by the following empirical formula:



wherein R is the hydroxy-free residue of an organic polyhydric alcohol which contains alcoholic hydroxy groups bonded to different carbon atoms, R_1 and R_2 are independently hydrogen or methyl, and n is 1 to 3;

(b) an ethylenically unsaturated monomer which is soluble in and copolymerizable with (a);

(c) a thermoplastic polymer low profile additive which is soluble in the mixture of (a) and (b) selected from the group consisting of carboxylated vinyl acetate polymers and polystyrene; and

(d) a free radical initiator mixture containing a major amount of at least one initiator with a 10 hour half-life temperature ($t_{\frac{1}{2}}$) of greater than about 90° C. and an amount sufficient to improve the shrinkage control characteristics of the composition of at least one initiator with a 10 hour half-life temperature ($t_{\frac{1}{2}}$) of less than about 90° C. selected from the group consisting of mixtures of 1,1-di-t-butylperoxy-3,3,5-trimethylcyclohexane and 2-t-butylazo-2-cyano-4-methylpentane; tert-butyl perbenzoate and tert-butyl peroctoate; tert-butyl perbenzoate and 2,5-dimethyl-2,5-bis(2-ethylhexanoylperoxy)hexane; and mixtures thereof,

said components (a), (b), (c), and (d) being selected such that said curable molding composition has a viscosity of from about 10 to about 600 centipoise.

4,585,834

SILICON-CONTAINING STEP LADDER POLYMER AND A PROCESS FOR PRODUCING THE SAME

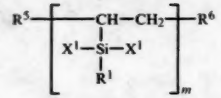
Shiro Konotsune, Yokosukashi; Hiromi Higashi, Zushishi; Masami Wada, Yokosukashi; Hiroshi Maehara, Yokohamashi, and Kazuyuki Tsuji, Tokyo, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Division of Ser. No. 651,689, Sep. 18, 1984. This application Jul. 24, 1985, Ser. No. 758,367

Int. Cl.[4] C08F 8/40

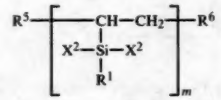
U.S. Cl. 525—342 32 Claims

1. A process for producing a silicon-containing step ladder polymer which comprises a step of substituting the group X^1 in a polyvinyl silane prepolymer represented by the general formula:



where R^1 represents a hydrocarbon group or fluorine-substituted hydrocarbon group, X^1 represents a dialkylamino group comprising alkyls each having 4 or less carbon atoms, chlorine, fluorine or iodine, R^5 and R^6 represent individually hydrogen or hydrocarbon residue of a vinyl polymerization initiator, and m represents an integer between 5–100, with an a acyloxy group represented by: R^7COO— (where R^7 represents an alkyl group having 4 or less carbon atoms), and a step of carrying out the intra-molecular hydrolysis of the prepolymer, as well as the hydrolytic condensation between the prepolymer and a stepping agent represented by the general formula: $R^3R^4Si(OCOR^7)_2$ (where R^3 and R^4 which may be identical or different with each other represent individually hydrocarbon group or fluorine-substituted hydrocarbon groups, and R^7 represent an alkyl group having 1–4 carbon atoms.

20. A process for producing a silicon-containing step ladder polymer, wherein a polyvinyl silane prepolymer represented by the general formula:



(where R^1 represents a hydrocarbon group or a fluorine-substituted hydrocarbon group, X^2 represents an alkoxy group having 7 or less carbon atoms or a thioalkoxy group having 7 or less carbon atoms, R^5 and R^6 represent individually hydrogen or hydrocarbon residue of a vinyl polymerization initiator an m represents an integer between 5–100) is reacted with an acid anhydride represented by the general formula: $(R^7CO)_2$ (where R^7 represents an alkyl group having 1–4 carbon atoms under the presence of a compound as the stepping agent represented by the general fromula $R^3R^4SiY_2$ (where R^3 and R^4 represent individually hydrocarbon or fluorine-substituted hydrocarbon groups, which may be identical or different with each other, and Y represents an acyloxy group having 2–5 carbon atoms, an alkoxy group having 1–4 carbon atoms or a thioalkoxy group having 1–4 carbon atoms).

4,585,835

POLYMER COMPOSITIONS

Takeo Saegusa, Kyoto; Yoshiyuki Sano; Yoshiharu Kimura, both of Shiga; Osami Shinonome, and Taro Tokuzawa, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Continuation of Ser. No. 439,251, Nov. 4, 1982, abandoned. This application Dec. 24, 1984, Ser. No. 685,621

Claims priority, application Japan, Nov. 5, 1981, 56-177420; Nov. 5, 1981, 56-177421

Int. Cl.[4] C08L *71/02*

U.S. Cl. 525—430 **9 Claims**

1. A polymer composition, comprising:

a polymer (A) having a zwitterion structure selected from the group consisting of a sulfo ammonium zwitterion structure and a carboxy ammonium zwitterion structure, wherein the polymer (A) is comprised of 80% by weight or more of a polyalkylene oxide component; and

an organic synthetic copolyamide (B), wherein the copolyamide (B) is comprised of a polyalkylene oxide component.

4,585,836

SILICONE PRESSURE-SENSITIVE ADHESIVE PROCESS AND PRODUCT WITH IMPROVED LAP-SHEAR STABILITY-II

Gary R. Homan, and Harold L. Vincent, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 29, 1984, Ser. No. 665,796

Int. Cl.[4] C08L *83/06*

U.S. Cl. 525—477 **32 Claims**

1. A method of making a silicone pressure-sensitive adhesive composition having improved lap shear stability which consists essentially of the steps of:

(I) mixing

(A) from 40 to 70 inclusive parts by weight of at least one benzene-soluble resin copolymer containing silicon-bonded hydroxyl radicals and consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units in a mole ratio of from 0.6 to 0.9 $R_3SiO_{\frac{1}{2}}$ units for each $SiO_{4/2}$ unit present,

(B) from 30 to 60 parts by weight of at least one polydiorganosiloxane consisting essentially of $ARSiO$ units terminated with endblocking $TRASiO_{\frac{1}{2}}$ units, each said polydiorganosiloxane having a viscosity of from 100 centipoise to 30,000,000 centipoise at 25° C., and each T is R— or X—,

(C) a sufficient amount of at least one organosilicon endblocking agent capable of generating an endblocking triorganosilyl unit of the formula

ZR_2Si— to provide a 1:0.8 to 1:3 mole ratio of total silicon-bonded hydroxyl and X radicals present in said (A) and (B) to total endblocking triorganosilyl units provided by all endblocking agent present, said agent being selected from the group consisting of ZR_2SiNH_2 and $(ZR_2Si)_2NH$,

(D) from 0.1 to 10 moles of water per mole of =NH provided by said (C),

(E) from 0.001 to 10 parts by weight per 100 parts by weight of (A) and (B) of at least one ammonia scavenger compound selected from the group consisting of HOC_mH_{2m+1}, $HOC_xH_{2x}(OC_xH_{2x})_y(O)_vH$, $C_wH_{2w+1}(OC_xH_{2x})_yOC_wH_{2w+1}$, $C_wH_{2w+1}C(O)OC_nH_{2n+1}$ and $HC(O)OC_nH_{2n+1}$, and

(F) when necessary, an effective amount of an organic solvent which is inert with respect to (A) through (E), inclusive, to reduce the viscosity of a mixture of (A), (B), and (C),

(II) condensing (A), (B) and (C) at a temperature of from 80° C. to 160° C. and at the same time at least periodically removing any condensation by-products from the mixture at least until a substantial amount of the endblocking triorganosilyl units have reacted with the silicon-bonded hydroxyl radicals and X radicals of said (A) and (B), and

(III) stripping substantially any remaining condensation by-products, (D) and (E) from the mixture after the condensation reaction of step II is substantially complete,

wherein each R is a monovalent organic radical selected from the group consisting of hydrocarbon radicals of from 1 to 6 inclusive carbon atoms, each X radical is selected from the group consisting of HO—, H— and R'O— radicals, each R' is an alkyl radical of from 1 to 4 inclusive carbon atoms, m has a value of from 2 to 4, n has a value of from 1 to 6, v is 0 or 1, w has a value of from 1 to 3, x has a value of from 2 to 6, y has a value of from 0 to 3, each A radical is selected from the group consisting of R— and halohydrocarbon radicals of from 1 to 6 inclusive carbon atoms, each Z radical is A— or QR''—, each R'' is a divalent alkylene radical of from 1 to 6 inclusive carbon atoms, each Q is an organofunctional monovalent radical selected from the group consisting of RCOE'—, RE'OC—, NC—, R'E'—, HO—, G_2N—, $HO(R''O)_n$—where E' is —O—, —NH— or —S—, and each G is R'— or H—,

4,585,837

RESOLES CONTAINING ZIRCONIUM METAL ATOMS

Paul V. Mosher, Torrance, Calif., assignor to Hitco, Gardena, Calif.

Continuation-in-part of Ser. No. 479,880, Mar. 29, 1983, abandoned. This application Jan. 16, 1985, Ser. No. 691,769

Int. Cl.[4] C08G 8/32

U.S. Cl. 525—506 8 Claims

7. A process for preparing a thermosetting resol containing zirconium atoms which comprises reacting a thermosetting resol with zirconyl acetate.

4,585,838

PROCESS FOR PREPARING EPOXY RESINS CONTAINING LOW LEVELS OF TOTAL HALIDE

Chun S. Wang, Lake Jackson; Robert L. Bowden, Angleton, and Wuu N. Chen, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 762,971, Aug. 6, 1985, abandoned, which is a continuation-in-part of Ser. No. 672,775, Nov. 19, 1984, abandoned. This application Sep. 9, 1985, Ser. No. 773,500

Int. Cl.[4] C08G 59/14

U.S. Cl. 525—507 10 Claims

1. A method for reducing the total halide content of an epoxy resin which method comprises heating said epoxy resin which has been dissolved in a solvent system comprising from about 25 to about 75 percent by weight of a ketone and from 75 to about 25 percent by weight of an aromatic hydrocarbon in the presence of (A) from about 0.1 to about 5 percent by weight based upon the weight of said epoxy resin of at least one cosolvent having at least one aliphatic hydroxyl group per molecule and (B) from about 0.25 to about 10 moles of an alkali metal hydroxide per equivalent of halide at a temperature and for a time sufficient to reduce the total halide content of said epoxy resin and thereafter recovering the resultant epoxy resin.

4,585,839

CATALYST CONTAINING AN AROMATIC SILICON COMPOUND FOR THE POLYMERIZATION OF ETHYLENE

Karel Bujadoux, Lens, and Jean-Marie Neyer, Etzling, both of France, assignors to Societe Chimique des Charbonnages S.A., Paris, France

Division of Ser. No. 594,415, Mar. 28, 1984, Pat. No. 4,537,868, which is a continuation of Ser. No. 326,195, Dec. 1, 1981, abandoned. This application Jun. 12, 1985, Ser. No. 743,936

Claims priority, application France, Dec. 2, 1980, 80 25519

Int. Cl.[4] C08F 4/64, 10/02

U.S. Cl. 526—114 8 Claims

1. A process for the polymerization of ethylene in a reactor comprising reacting said ethylene in the presence of the catalyst system comprising at least one halogenated compound of a transition metal of Groups IV to VI of the Periodic System, said metal being in the trivalent state in said compound, and at least one aromatic silicon compound having the formula $\phi_n Si(OH)_{4-n}$, in which ϕ is an aromatic or polyaromatic ring compound having from 6 to 15 carbon atoms and $1 \leqq n \leqq 3$, said aromatic silicon compound being present in a molar ratio of between 0.2 and 2 inclusive with respect to said transition metal, wherein said aromatic or polyaromatic ring compound may have one or more hydrocarbon radicals substituted on the aromatic or polyaromatic rings of said compound and at least one activator, selected from hydrides and organometallic compounds of metals of Groups I to III of the Periodic System, the atomic ratio of the metal of the activator to the transition metal of Groups IV to VI lying between 0.1 to 10 under a pressure of between 200 to 2500 bars and at a temperature of between 170° and 300° C., the average residence time of said system in the polymerization reactor lying between 2 and 100 seconds.

4,585,840

OLEFIN POLYMERIZATION CATALYSTS ADAPTED FOR GAS PHASE PROCESSES

Laurence H. Gross, Bridgewater, and Allen Noshay, East Brunswick, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 510,216, Jul. 1, 1983, abandoned. This application Apr. 17, 1985, Ser. No. 724,272

Int. Cl.[4] C08F 4/02, 10/00

U.S. Cl. 526—159 3 Claims

1. A process for catalytically polymerizing one or more olefin monomers in a low pressure gas phase fluidized bed process which comprises polymerizing said monomers in such process with a catalyst composition comprising

(a) a supported catalyst precursor formed by mixing together in a high speed bladed finishing device

(i) about 50 to 95 weight % of solid inert particulate organic support material having an average particle size of 0.05 to 0.35 mm, a melting point of about 70° to 170° C., and a density of about 0.9 to 1.5 grams/cc, and

(ii) about 5 to 50 weight % of solid particlate transition metal based low pressure olefin polymerization catalyst precursor,

said particulate catalyst precursor being embedded in said particulate organic support material by said mixing, and

(b) activating quantities of organometallic reducing agent compound.

4,585,841

TRANSPARENT RESIN MATERIAL CONTAINING METALLIC ATOMS BONDED TO PENDENT CARBOXYLIC ACID GROUPS

Shuji Eguchi; Noriaki Taketani, both of Hitachi; Hideki Asano, Mito, and Motoyo Wajima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 1, 1983, Ser. No. 547,585

Claims priority, application Japan, Nov. 1, 1982, 57-190875; Mar. 4, 1983, 58-34379; Jul. 27, 1983, 58-135881

Int. Cl.[4] C08F 30/04, 130/04, 230/04

U.S. Cl. 526—240 30 Claims

1. A transparent resin material consisting essentially of a polymer containing metallic atoms (except for alkali metals) which are ionic-bonded to a vitreous copolymer constituting the substance of said resin material, in an amount of at least 8% by weight based on the total weight of the resin material, said resin material having a transparency of at least 80% in terms of light transmittance measured for a test piece of 2 mm thickness, and a refractive index n_D^{25} of at least 1.55, said vitreous copolymer being composed of the following recurring units:

(a) a residue of a copolymerizable vinly monomer;

(b) a residue of a carboxylic acid polymer, at least one of the carboxylic groups of the polymer being ionic-bonded through a metallic atom to a carboxylic group of an aromatic carboxylic acid;

(c) a residue of a carboxylic acid, the acid residue having at least one free carboxylic acid group; and

(d) a residue of a carboxylic acid polymer which is cross-linked by ion-linkage through a metallic atom.

4,585,842

METHOD OF TREATING A POLYMERIZING REACTOR

Paul Laroche, and Jean-Bernard Pompon, both of Saint Auban, France, assignors to Chloe Chimie, France

Filed Jun. 14, 1982, Ser. No. 387,923

Claims priority, application France, Mar. 26, 1982, 82 05143

Int. Cl.[4] C08F 10/00

U.S. Cl. 526—62 15 Claims

1. A method of treating a polymerization reactor to minimize polymer build-up thereon comprising coating the internal surfaces within the reactor with a resin extracted from pine wood prior to carrying out the polymerization reaction in the reactor.

4,585,843

EXOTHERMIC REACTIONS

Peter Flesher; David Farrar, and Ian M. Johnson, all of West Yorkshire, United Kingdom, assignors to Allied Colloids, Ltd., England

Continuation-in-part of Ser. No. 600,583, Apr. 17, 1984, abandoned. This application Nov. 30, 1984, Ser. No. 676,691

Claims priority, application United Kingdom, Apr. 20, 1983, 8310662

Int. Cl.[4] C08F *2/02*

U.S. Cl. 526—63 15 Claims

1. A bulk gel polymerization process for producing a water soluble polymer by exothermic bulk gel polymerisation of a reaction mixture that comprises 100 parts polymerisable monoethylenically unsaturated monomers dissolved in 33 to 250 parts added free water and that contains a heat sink material that is in a first thermodynamic state, is particulate and is substantially insoluble in the reaction mixture, in which the polymerisation reaction is initiated at a temperature T_1 at which the heat sink material remains in its first thermodynamic state, the temperature of the reaction mixture rises exothermically to T_2 at which the heat sink material undergoes an endothermic change of state to a second thermodynamic state by absorbing the exothermic heat of polymerisation and the amount of heat sink material is such that when the all the heat sink material is in the second thermodynamic state, the temperature rises exothermically to T_3, and in which the process includes the step of converting the heat sink material from the first thermodynamic state to a final thermodynamic state in which it is particulate and substantially insoluble in liquid medium.

4,585,844

PROCESS FOR PREPARING ACID DYEABLE ACRYLONITRILE POLYMER HAVING IMPROVED WHITENESS

William K. Wilkinson, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 521,912, Aug. 10, 1983, abandoned. This application Jul. 30, 1984, Ser. No. 635,747

Int. Cl.[4] C08F *6/16*

U.S. Cl. 526—84 7 Claims

1. In the process for acidic aqueous polymerization of an acrylonitrile composition wherein the polymerizable portion comprises from 85 to 99 by weight acrylonitrile, from 1 to 10% by weight of a basic comonomer which is an N,N-dialkylaminoethylacrylate or methacrylate, and up to 13% of a neutral ethylenically unsaturated monomer using less than about 10% by weight based on monomers peroxy catalyst selected from the group consisting of hydrogen peroxide, alkyl and aryl hydroperoxides, acetyl and triacetone peroxides and alkali metal perborates and percarbonates and an activator selected from the group consisting of 1-thioglycerol, 1-thiosorbitol and thioglycol, the improvement comprising quenching of the reaction mixture with a metal sequestering agent and at least 10 mol% based on the amount of peroxy catalyst of a quenching compound selected from the group consisting of SO_2, sodium bisulfite and sodium metabisulfite.

4,585,845

PHOSPHONIC ACID CROSS-LINKED HYDROPHILIC COPOLYMERS

Friedrich Engelhardt, Frankfurt am Main; Klaus Kühlein, Kelkheim; Juliane Balzer, Frankfurt am Main; Walter Dürsch, Königstein, and Hans-Jerg Kleiner, Kronberg, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

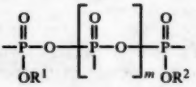
Filed Apr. 9, 1984, Ser. No. 597,839

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, 3314569

Int. Cl.[4] C08F *230/02*

U.S. Cl. 526—240 7 Claims

1. In a crosslinked copolymer of olefinically unsaturated monomers crosslinked with a plurality of crosslinking members, the improvement comprises said crosslinking members being bridge members of the formula



wherein R^1 and R^2 independently of one another are hydrogen or alkyl with 1 to 4 carbon atoms and m is a number from 0 to 6.

4,585,846

CYCLOPOLYMERIZABLE SULFOBETAINE MONOMER

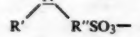
Donald N. Schulz, Annandale, and Jeffrey J. Kaladas, South Bound Brook, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 2, 1985, Ser. No. 688,243

Int. Cl.[4] C08F *4/00*

U.S. Cl. 526—264 3 Claims

1. A water soluble copolymer of N-(4-sulfoalkyl)N-methyldiallyl ammonium betaine and N-vinyl pyrrolidone wherein said N-(4-sulfoalkyl)N-methyldiallyl ammonium betaine has the formula:



wherein R′ is an alkyl group having about 1 to about 20 carbon atoms and R″ is an alkyl group having about 3 to about 4 carbon atoms.

4,585,847

CURABLE MOLDING COMPOSITIONS CONTAINING A HALF ESTER OF AN ORGANIC POLYOL

Linda A. Domeier, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

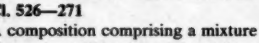
Continuation of Ser. No. 279,440, Jul. 1, 1981, abandoned. This application Nov. 15, 1984, Ser. No. 671,037

Int. Cl.[4] C08F *122/04, 222/04*

U.S. Cl. 526—271 16 Claims

1. A composition comprising a mixture of:

(a) from about 10 to about 75 weight percent of a half ester of an organic polyol characterized by the following empirical formula:



(I)

wherein n is a number having an average value of about 1.5 to less than about 4, m is equal to the free valence of R less the average value of n, and R is the hydroxyl-free residue of an organic polyol which contained from 2 to 4, inclusive, hydroxyl groups in formula (I);

(b) from about 0.1 to 5 weight percent of maleic anhydride;

(c) from about 5 to about 30 weight percent of one or more of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, hydroxypropyl acrylate, and hydroxypropyl methacrylate; and

(d) from about 25 to about 65 weight percent of styrene.

4,585,848

FLUOROSILICONE RUBBER COMPOSITION, PROCESS AND POLYMER

Edwin R. Evans, 9 Rodriso Ct., and Makoto Matsumoto, 6 St. James London Square Apt., both of Clifton Park, N.Y. 12065

Continuation of Ser. No. 253,282, Apr. 9, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,545

Int. Cl.[4] C08G 77/06

U.S. Cl. 528—15 12 Claims

1. In a solvent resistant room temperature vulcanizable silicone rubber composition comprising

(A) a mixture composed of

(i) a vinyl-terminated base polymer, said base polymer being prepared by copolymerization of methyl-3,3,3-trifluoropropylsiloxane cyclic trimer and octamethylcyclotetrasiloxane, and the viscosity of said base polymer varies from 1,000 to 200,000 centipoise at 25° C., and

(ii) a platinum catalyst, and

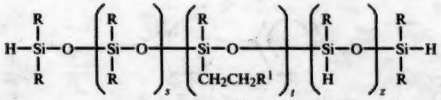
(B) alone, or in admixture with base polymer (i),

(iii) a cross-linking polymer selected from

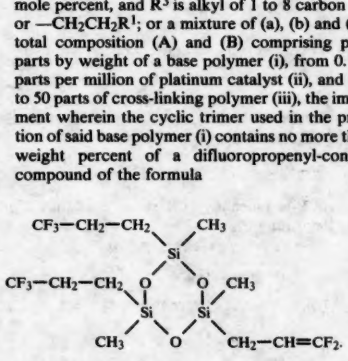
(a) a resin having

and SiO_2 units where the R to Si ratio varies from 1.0 to 2.7; (b) a resin having

units, SiO_2 units and RR^3SiO units where the R to Si ratio varies from 1.2 to 2.7; (c) a polymer of the formula:



where R is alkyl of from 1 to 8 carbon atoms or phenyl, R^1 is perfluoroalkyl of from 1 to 8 carbon atoms, s is at least 1, t and z may be zero or a positive integer and the viscosity or the polymer varies from 10 to 1,000 centipoise at 25° C., where the concentration of siloxy units taken t times varies from 0 to 75 mole percent, and R^3 is alkyl of 1 to 8 carbon atoms, or $—CH_2CH_2R^1$; or a mixture of (a), (b) and (c), the total composition (A) and (B) comprising per 100 parts by weight of a base polymer (i), from 0.1 to 50 parts per million of platinum catalyst (ii), and from 1 to 50 parts of cross-linking polymer (iii), the improvement wherein the cyclic trimer used in the preparation of said base polymer (i) contains no more than 1.0 weight percent of a difluoropropenyl-containing compound of the formula



4,585,849

RTV SILICONE PASTES

Franz Saykowski, Cologne; Thomas Würminghausen, Leverkusen; Hans Stattlegger, Odenthal, and Theo Achtenberg, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 26, 1984, Ser. No. 654,996

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336135

Int. Cl.[4] C08G 77/06

U.S. Cl. 528—17 12 Claims

1. In a polydiorganosiloxane composition which is capable of storage in the absence of moisture and can be cured at ambient temperature under the action of water or moisture to give elastomers, the composition comprising a diorganosiloxane having reactive terminal groups, a diorganosilane having groups which are sensitive to hydrolysis, a cross-linking agent, and optionally fillers which have a thixotropic effect, and condensation catalysts, the improvement which comprises employing as the silane (a) a silane of the formula

$$RR^1Si(NR^2R^3)_2$$

plus (b) an organosilane of the formula

$$RSi(O—N=R^4)_3$$

in which

R, R^1, R^2 and R^3 each independently is alkyl, aryl, aralkyl and vinyl groups, or

R^2 and R^3 can be H or together can be an divalent alkyl radical radical having up to 8 C atoms, and

R^4 is an R^2R^3—C group having up to 8 C atoms.

4,585,850

FLAKEGLASS WITH SIZING, AMINO, CHLORO, ISOCYANATE AGENTS COATED DIRECTLY ONTO THE GLASS IN RRIM ELASTOMERS

Richard J. G. Dominguez, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 30, 1984, Ser. No. 645,721

Int. Cl.[4] C08G 18/38, 18/50; B28B 1/24; C08K 3/40

U.S. Cl. 528—122 13 Claims

1. A reaction injection molded elastomer made by reacting in a closed mold amine terminated polyethers of greater than 1,500 average molecular weight having greater than 50% of their active hydrogen in the form of amine hydrogens, a chain extender, flaked glass pretreated with amino silane coupling agent, and an aromatic polyisocyanate.

12. A method for making a reaction injection molded elastomer comprising reacting in a closed mold amine terminated polyethers of at least 5000 molecular weight and having a functionality of from about 2 to 3 having greater than 50% of their active hydrogen in the form of amine hydrogens, a chain extender, flaked glass pretreated with chloro silane coupling agent, and an aromatic polyisocyanate.

13. A reaction injection molded elastomer made by reacting in a closed mold amine terminated polyethers of greater than 1,500 average molecular weight having greater than 50% of their active hydrogen in the form of amine hydrogens, a chain extender, flaked glass pretreated with isocyanate silane coupling agent, and an aromatic polyisocyanate.

4,585,851

PROCESS FOR PREPARING POLYESTERS AND POLYESTERCARBONATES POLYMERS WHICH ARE ADAPTABLE FOR WIRE ENAMELS

Daniel W. Fox, Pittsfield, Mass., and John J. Keane, Ballston Lake, N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 276,916, Jun. 24, 1981, Pat. No. 4,452,278. This application Feb. 24, 1984, Ser. No. 583,511

Int. Cl.[4] C08G *63/18, 63/64*

U.S. Cl. 528—176 **1 Claim**

1. A process for making a polyester resin which consists essentially of heating, at a temperature of from about 200° C. to about 270° C. for a period of at least about 2 hours, a mixture consisting essentially of:

a. a diaryl terephthalate;

b. a diaryl isophthalate; or

c. mixtures of a and b above;

d. a diphenol; and

e. a triaryl mellitate

with or without the presence of a diaryl carbonate to provide a copoly carbonate of the polyester.

4,585,852

TWO-STEP PROCESS FOR PRODUCING POLYETHERIMIDES

Jhy-Dou R. Lo, Cupertino, Calif., and William R. Schlich, Pittsfield, Mass., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 20, 1984, Ser. No. 673,331

Int. Cl.[4] C08G *73/10*

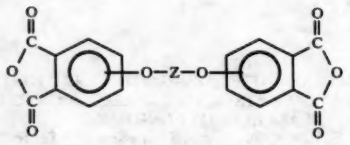
U.S. Cl. 528—185 **15 Claims**

1. A process for producing a polyetherimide which comprises

(A) extruding a first mixture of an organic diamine of the formula

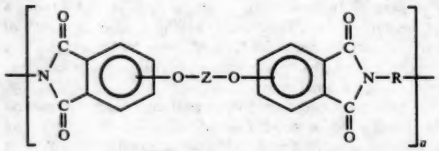
$$H_2N—R—NH_2$$

and an aromatic bis(ether anhydride) of the formula

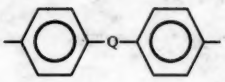


under melt polymerization conditions to form a low molecular weight polymer, wherein said mixture contains a stoichiometric molar excess of the organic diamine or the aromatic bis(ether anhydride); and

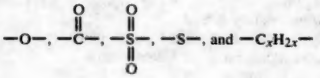
(B) extruding, under melt polymerization conditions, a second mixture of the low molecular weight polymer produced by step (A) and a stoichiometrically sufficient amount of the monomer which was employed at the lower molar amount in step (A) to produce a polyetherimide, of the formula



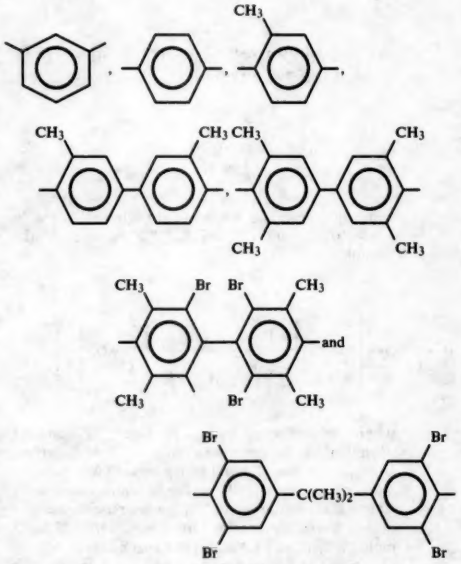
wherein "a" is an integer greater than 1, R is a divalent aromatic organic radical selected from the group consisting of (a) aromatic hydrocarbon radicals having from 6 to about 20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2 to about 20 carbon atoms, $C_{(2-8)}$ alkylene terminated polydiorganosiloxanes, and (c) divalent radicals included by the formula



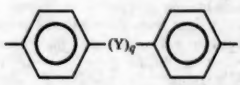
where Q is a member selected from the group consisting of



where x is an integer from 1 to about 5; Z is a member of the class of (1)



and (2) divalent organic radicals of the formula



wherein Y is a member of the class consisting of divalent radicals of the formulas

wherein q is 0 or 1 and y is an integer from 1 to about 5;

and the divalent bonds of the —O—Z—O— group are in the 3,3′,3,4′,4,3′ or the 4,4′ positions.

4,585,853

ACID GROUP-CONTAINING HYDROPHILIC CO-CONDENSATION PRODUCTS OF KETONE-ALDEHYDE RESINS

Johann Plank, and Alois Aignesberger, both of Trostberg, Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Mar. 14, 1984, Ser. No. 589,471

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315152

Int. Cl.⁴ C08G *12/00, 8/00, 4/00*

U.S. Cl. 528—227 **15 Claims**

1. Acid group-containing thermostable hydrophilic co-condensation products of ketone-aldehyde resins obtainable by co-condensation, at a pH of 7 to 14, of at least one ketone and at least one aldehyde with at least one acid group-introducing compound and with at least one aromatic compound.

4,585,854

POLYESTER COMPOSITION

William C. T. Tung, Tallmadge, and George A. Deisz, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 600,862, Apr. 16, 1984, Pat. No. 4,525,524. This application Feb. 7, 1985, Ser. No. 699,286

Int. Cl.⁴ C08G *63/68*

U.S. Cl. 528—295 **13 Claims**

1. A polyester comprised of repeat units which are derived from (A) a diacid component which is comprised of (1) from 20 to 90 mole percent of at least one member selected from the group consisting of dimethylterephthalate and terephthalic acid, (2) from 1 to 6 mole percent of at least one salt of an organic sulfonic acid monomer, and (3) from 4 to 74 mole percent of at least one member selected from the group consisting of alkyl dicarboxylic acids having from 4 to 36 carbon atoms, diesters of alkyl dicarboxylic acids having from 6 to 38 carbon atoms, aryl dicarboxylic acids having from 9 to 20 carbon atoms, diesters of aryl dicarboxylic acids having from 11 to 22 carbon atoms, alkyl substituted aryl dicarboxylic acids having from 9 to 20 carbon atoms, diesters of alkyl substituted aryl dicarboxylic acids having from 11 to 22 carbon atoms, dimethylorthophthalate, dimethylisophthalate, orthophthalic acid, and isophthalic acid: and (B) a diol component which is comprised of (1) from 20 to 100 mole percent ethylene glycol, and (2) from 0 to 80 mole percent of one or more members selected from the group consisting of glycols having from 3 to 12 carbon atoms and glycol ethers having from 4 to 12 carbon atoms: wherein said polyester is terminated with carboxyl end groups.

4,585,855

PROCESS FOR PRODUCING CURABLE RESIN COMPOSITION FROM CYANATE ESTER AND MALEIMIDE/DIAMINE REACTION PRODUCT

Morio Gaku, Saitama; Hidenori Kimbara, and Mitsuo Ejiri, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Feb. 28, 1985, Ser. No. 706,981

Claims priority, application Japan, Mar. 2, 1984, 59-40217; Mar. 2, 1984, 59-40218; Mar. 2, 1984, 59-40219; Aug. 27, 1984, 59-178066

Int. Cl.⁴ C08F *283/00*

U.S. Cl. 528—322 **11 Claims**

1. A process for producing a curable resin liquid comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(i) polyfunctional aromatic cyanate ester monomers having the formula

$$R—(O—C{\equiv}N)_n$$

wherein n is an interger of 2–10 and R is an aromatic organic group, the cyanate group bonded to an aromatic ring or said aromatic organic group, and

(ii) homoprepolymer of (i), and

(b) a preliminary reaction product of (1) a diamine and (2) at least one polyfunctional maleimide compounds, wherein the process comprises

(A) reacting said at least one maleimide compound with said diamine in the presence of a diluent at a temperature of 60°–200° C., the ratio of the maleimide group to the amine group being in the range of from 1:0.0015 to 1:0.3 to form a preliminary reaction product substantially free from amine group; and

(B) mixing said preliminary reaction product with at least one said cyanate ester compound in a weight ratio of said preliminary reaction product to said cyanate ester compound of about 90:10 to 1:99.

4,585,856

PROCESS FOR THE PREPARATION OF POLYARYLENE SULPHIDES

Wolfgang Ebert; Rolf-Volker Meyer; Karsten-Josef Idel, all of Krefeld, and Rüdiger Schubart, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 607,961, May 7, 1984, abandoned. This application Aug. 23, 1985, Ser. No. 768,575

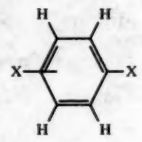
Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317820

Int. Cl.⁴ C08G *75/14*

U.S. Cl. 528—388 **9 Claims**

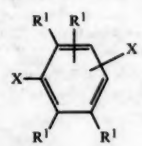
1. A process for the preparation of high molecular weight polyarylene sulphides from reactants consisting of:

(a) dihalogen benzenes, 0 to 100 mol percent of which correspond to formula (I):



(I)

and 100 to 0 mol percent to formula (II):



(II)

wherein

X represents halogen in the meta or para positions relative to each other, and

R^1 is identical or different at each position and represents hydrogen, C_1–C_{20} alkyl, C_7–C_{24} alkaryl, C_7–C_{24} aralkyl, or two groups R^1 which are in the ortho positions relative to each other linked together to form an aromatic or heterocyclic 5- to 10-membered ring containing up to three O, N or S hetero atoms, and in all cases at least one of the groups R^1 is different from hydrogen, and

(b) 0 to 5.0 mol percent, based on the sum of the aromatic dihalogen compounds of formulae (I) and (II), of an aromatic trihalogen or tetrahalogen compound of formula (III):

$$ArHal_n \qquad \text{(III)}$$

wherein

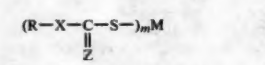
Ar represents an aromatic group having 6 to 24 carbon atoms or heterocyclic group having 6 to 24 carbon atoms with up to three N, O or S hetero atoms,

Hal represents halogen, and

n represents the number 3 or 4, and

(c) alkali metal sulphides, with the molar ratio of (a+b):c lying within the range of from 0.85:1 to 1.15:1, and in the presence of

(d) a polar solvent, with the molar ratio of (c) to (d) within the range of from 1:2 to 1:1.15, characterized in that the components (a) to (c) are reacted together in the presence of 0.005 to 0.15 mole of thio salts, per mole of alkali metal sulphide, corresponding to formula (IV):



(IV)

wherein

R represents C_1–C_{20} alkyl, C_5–C_{20} cycloalkyl, C_6–C_{24} aryl, C_7–C_{24} aralkyl, or heterocycles corresponding to said cycloalkyl, aryl or aralkyl groups wherein 1 to 3 ring carbon atoms are replaced by N or O hetero atoms,

X represents a single bond, O, S, or

wherein R^1 is as defined above,

Z represents O or S, and

M represents an n-valent cation from the group of alkali metals, alkaline earth metals, or an ammonium cation of the formula $[NR_4^1]^+$ wherein R^1 is as defined above, and m=1, 2 or 3.

4,585,857

BLEACH OXIDATION OF N,N'-DI-T-OCTYLSULFAMIDE TO DI-T-OCTYLDIAZENE

Ronald E. MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 14, 1984, Ser. No. 681,732

Int. Cl.[4] C07C *107/02*

U.S. Cl. 534—587 **5 Claims**

1. An improved process of preparing di-t-octyldiazene comprising oxidizing one equivalent of N,N'-di-t-octylsulfamide with at least two equivalents of sodium hypochlorite and 1.0 equivalent of sodium or potassium hydroxide at a temperature of 65°-90° C. in the presence of less than 4 parts of hydrocarbon or chlorinated hydrocarbon solvent per part N,N'-di-t-octylsulfamide for about 2 to 5 hours until completion of the reaction recovering the product in high purity and high yield.

4,585,858

STARCH-BASED POLYETHER POLYOLS

Hyman M. Molotsky, Chicago, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 606,596, Jan. 3, 1967, abandoned. This application Jan. 11, 1971, Ser. No. 105,684

Int. Cl.[4] C07H *15/08*

U.S. Cl. 536—4.1 **11 Claims**

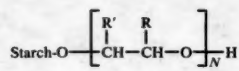
1. A polyether polyol consisting essentially of

(1) an oxyalkylated polyalcohol which is the reaction product of

(a) a polyhydroxy compound selected from the group consisting of glycols, glycerin, methyl glucoside, propylene glycol glucoside, sucrose and polyethers thereof, and

(b) a lower aliphatic alkylene oxide, and

(2) an oxyalkylated polysaccharide of the general formula:



where N has a value in the range from about 3.5 to about 50, per average anhydroglucose unit, and R and R' are of the class consisting of H, CH_3—, C_2H_5—, and C_3H_7.

4,585,859

ANALOGUES OF MORPHOLINYL DAUNORUBICIN AND MORPHOLINYL DOXORUBICIN

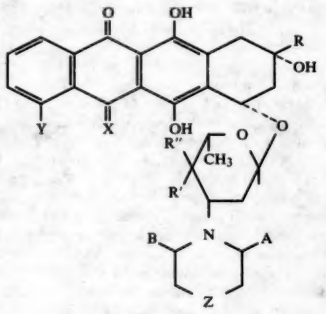
Carol W. Mosher, Stanford; George L. Tong, Cupertino, and Edward M. Acton, Menlo Park, all of Calif., assignors to SRI International, Menlo Park, Calif.

Continuation-in-part of Ser. No. 496,122, May 24, 1983, Pat. No. 4,464,529, which is a continuation-in-part of Ser. No. 400,120, Jul. 20, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 598,016

Int. Cl.[4] C07H *15/24*

U.S. Cl. 536—6.4 **8 Claims**

1. A compound of the formula



wherein

R is —CO—CH_3, —CHOH—CH_3, —CO—CH_2OH, or —CHOH—CH_2OH; hydroxy; a 1 to 3 carbon alkyl; a 1 to 3 carbon terminal hydroxyalkyl; a 2 to 7 carbon organic acid ester or diester of —CO—CH_2OH, —CHOH—CH_2OH, or —CHOH—CH_3; the groups —$COCH_2OH$, —$CHOHCH_2OH$ or —$CHOHCH_3$ having a 1 to 6 carbon alkyl or aryl ether replacement of one or more hydroxyls; or 13-ketimine derivative of —CO—CH_3 or —CO—CH_2OH;

Y is methoxy or hydrogen;

X is =O or =NH;

R' and R'' together are a hydrogen and a hydroxy, both are hydrogens, or R' is O-methoxy and R'' is hydrogen;

B is CN, or B and the hydrogen bonded to the same carbon taken together are =O; or

B and R' taken together are the oxygen bridge —O—; and

A is cyano;

Z is oxygen, sulfur, CH_2, or

wherein R''' is a 1 to 3 carbon alkyl,

and the pharmaceutically acceptable acid addition salts therof.

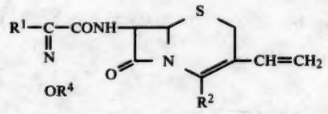
4,585,860

7-ACYLAMINO-3-VINYLCEPHALOSPORANIC ACID DERIVATIVES USEFUL FOR TREATMENT OF INFECTIOUS DISEASES IN HUMAN BEINGS AND ANIMALS

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Takashi Masugi, Ikeda; Hideaki Yamanaka, Hirakata, and Kohji Kawabata, Sumiyoshi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 205,334, Nov. 10, 1980, Pat. No. 4,409,214.
This application May 9, 1983, Ser. No. 493,051
Claims priority, application United Kingdom, Nov. 19, 1979, 7939985; Feb. 8, 1980, 8004335; Apr. 21, 1980, 8012991; Jul. 14, 1980, 8022920
The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.
Int. Cl.[4] C07D *501/18;* A01N *43/84*
U.S. Cl. 544—22 13 Claims

1. A compound of the formula:



in which R^1 is aminothiazolyl which may have halogen, aminothiadiazolyl, aminooxadiazolyl, aminopyridyl, aminopyrimidinyl, lower alkanamidothiazolyl which may have halogen, lower alkoxycarbonylaminothiazolyl, di(lower)alkylaminomethyleneaminothiadiazolyl, di(lower)alkylaminomethyleneaminooxadiazolyl, or lower alkanamidopyridyl,

R^2 is carboxy or a pharmaceutically acceptable esterified carboxy group, and

R^4 is hydrogen, cyclo(lower)alkenyl, lower alkynyl, lower alkenyl, lower alkenyl substituted by carboxy or a pharmaceutically acceptable esterified carboxy group, lower alkyl, or alkyl, or lower alkyl substituted by one or more substituents selected from amino, lower alkoxycarbonylamino, cyano, phosphono, O,O-di(lower)alkylphosphono and pyridyl, and a pharmaceutically acceptable salt thereof.

13. A method for treating an infectious disease caused by pathogenic microorganisms, which comprises administering an effective amount of a compound claimed in claim 1 to infected human beings or animals.

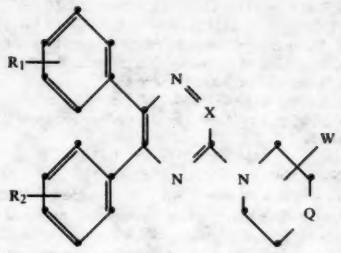
4,585,861

1,2,4-TRIAZINE DERIVATIVES

David T. Wong, and William B. Lacefield, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 354,982, Mar. 5, 1982, Pat. No. 4,513,135.
This application Jan. 4, 1985, Ser. No. 688,946
Int. Cl.[4] C07D *401/04, 413/04*
U.S. Cl. 544—182 19 Claims

1. A compound of the formula



wherein

each R_1 and R_2 is independently C_1–C_3 alkyl or chloro;

X is N;

Q is oxygen or $—(CH_2)_n—$, where n is 0, 1, or 2;

W is hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, keto, hydroxyimino, $(—OCH_2)_2$, hydroxy, hydroxymethyl, —OCHO, —OCOA, $—OSO_2A$, or —COB, where A is C_1–C_4 alkyl, phenyl, phenoxy, amino, C_1–C_3 alkyl substituted phenyl, or mono- or di-C_1–C_3 alkyl amino, and where B is C_1–C_3 alkoxy, amino, or mono- or di-C_1–C_3 alkylamino;

subject to the limitations that when Q represents oxygen, W is limited to hydrogen, and that when Q represents $—(CH_2)_n—$, W, except when hydrogen or C_1–C_3 alkyl, is not on a carbon atom adjacent to the ring nitrogen atom.

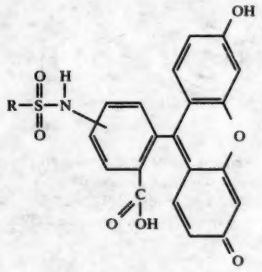
4,585,862

FLUORESCENCE POLARIZATION IMMUNOASSAY

Chao-Huei J. Wang, Gurnee; Stephen D. Stroupe, Libertyville, and Michael E. Jolley, Round Lake, all of Ill., assignors to Abbott Laboratories, Chicago, Ill.

Continuation of Ser. No. 329,975, Dec. 11, 1981, abandoned.
This application Feb. 8, 1984, Ser. No. 577,946
Int. Cl.[4] G01N *33/52*
U.S. Cl. 544—319 56 Claims

1. A compound of the formula



wherein

R is a ligand-analog of an aromatic carbon-containing ligand having a molecular weight in a range of 100 to 2000 wherein said ligand-analog has at least one common epitope with said ligand so as to be specifically recognizable by a common antibody and said ligand-analog has an aromatic carbon by which the ligand-analog is attached to the sulfonamidofluorescein moiety;

and biologically acceptable salts thereof.

4,585,863

PROCESS FOR THE MANUFACTURE OF 2-ISOPROPYL-4-METHYL-6-HYDROXYPYRIMIDINE

Wolfgang Deinhammer, and Bernd Schilling, both of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 16, 1984, Ser. No. 641,329

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1983, 3344429

Int. Cl.⁴ C07D *239/02*

U.S. Cl. 544—319 **3 Claims**

1. In a process for the manufacture of 2-isopropyl-4-methyl-6-hydroxypyrimidine by acylating 3-aminocrotonic acid amine with an isobutyryl compound, subsequently cyclizing the product under alkaline conditions and liberating the compound by means of an acid from the resulting hydroxypyrimidine derivative in the form of an alkali metal salt, the improvement comprising:

firstly, carrying out the acylation with excess isobutyric acid anhydride in the presence of an alkali metal salt of isobutyric acid at temperatures of from 50° to 120° C. in the absence of a solvent, wherein 1.01 to 1.5 moles of isobutyric acid anhydride and 0.01 to 0.4 moles of the alkali metal salt of isobutyric acid are used respectively per mole of 3-aminocrotonic acid amine;

secondly, carrying out the cyclization in the resulting reaction mixture by adding from 0.3 to 0.8 moles of aqueous alkali metal hydroxide solution at temperatures of from 80° to 105° C.; and

isolating said hydroxypyrimidine obtained by said cyclization step.

4,585,864

SILANATED QUINACRIDONE DYES

Antonio Marraccini, Dormelletto; Filippo M. Carlini, Novara; Antonio Pasquale, Novara, and Michele Pontevivo, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

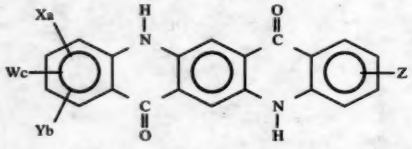
Filed Dec. 18, 1984, Ser. No. 683,133

Claims priority, application Italy, Dec. 27, 1983, 24386 A/83

Int. Cl.⁴ C09B *48/00*; C07D *471/04*

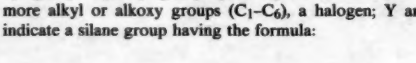
U.S. Cl. 546—14 **2 Claims**

1. A heterocyclic compound containing at least one silane group having the formula:



(I)

wherein X is an $-SO_2NHR$ group, where R is an alkyl group, linear or branched, having from 1 to 6 carbon atoms, a cycloalkyl group, a phenyl group optionally substituted by one or more alkyl or alkoxy groups (C_1–C_6), a halogen; Y and Z indicate a silane group having the formula:



wherein R_1 is an alkoxy group (C_1–C_2), R_2 is an alkyl group (C_1–C_4) or a phenyl group; n is 3, 4 or 5; q is 0 or 1; p and m are integers, such that when q is 1, p is 2 and m is 0, 1 or 2, and when q is 0, p is 3 and m is 0, 1, 2 or 3; W indicates an $-SO_3H$ group; a, b and c are 0 or 1, selected in such a way that the sum a+b+c is equal to 1.

4,585,865

AZABICYCLIC METHANOLS

Gino R. Treves, and Burton M. Baum, both of Princeton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 800,350, Feb. 10, 1969, Pat. No. 4,467,095. This application Nov. 22, 1972, Ser. No. 310,185

Int. Cl.⁴ C07D *221/02*

U.S. Cl. 546—112 **2 Claims**

1. 3-(1-azabicyclo[2.2.2.]oct-2-ene)methanol.

4,585,866

TREATMENT OF MIGRAINE WITH SUBSTITUTED TROPYL BENZOATE DERIVATIVES

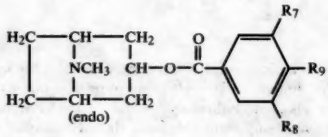
John R. Fozard, Strasbourg-Elsau, and Maurice W. Gittos, Plobsheim, both of France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 386,562, Jun. 9, 1982, abandoned. This application Dec. 13, 1984, Ser. No. 681,511

Int. Cl.⁴ C07D *451/12*

U.S. Cl. 546—129 **7 Claims**

1. A substituted tropyl benzoate derivative having the formula:



wherein

R_7 is C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen;

R_8 is C_1–C_4 alkyl or C_1–C_4 alkoxy;

R_9 is hydrogen or C_1–C_4 alkyl, with the proviso that when R_7 is alkyl, then R_9 must also be alkyl; or a pharmaceutically acceptable salt thereof.

4,585,867

PROCESS FOR THE PREPARATION OF 4-QUINOLINONES

Michel Arnaud, Salindres, and Jean-Pierre Corbet, Ecully, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Sep. 20, 1984, Ser. No. 652,529

Claims priority, application France, Sep. 22, 1983, 83 15072

Int. Cl.⁴ C07D *215/22*

U.S. Cl. 546—153 **7 Claims**

1. A process of the preparation of 7-chloro-1,2,3,4-tetrahydro-4-quinolinone which comprises treating 3-(m-chloroanilino)propionic acid with phosgene to produce N-chloroformyl-3-(m-chloroanilino)propionic acid, converting the said product, by the action of an organic base or by heating, into 3-(m-chlorophenyl)-2,6-dioxo-1,3-perhydrooxazine, and treating the latter with aluminium chloride in an inert organic solvent or with a strong acid, to provide 7-chloro-1,2,3,4-tetrahydro-4-quinolinone.

4,585,868

PRECURSORS OF 6,7-DIHYDRO-5,8-DIMETHYL-9-FLUORO-1-OXO-1H,5H-BENZO[IJ]QUINOLIZINE-2-CARBOXYLIC ACID

Richard M. Stern, Cottage Grove, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 441,245, Nov. 12, 1982, Pat. No. 4,472,405. This application Jun. 25, 1984, Ser. No. 624,408

Int. Cl.⁴ C07D *215/48, 215/14*

U.S. Cl. 546—165 **4 Claims**

2. The compound 6-fluoro-5-methyl-1,2,3,4,-tetrahydroquinaldine.

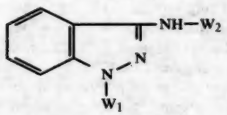
4,585,869

3-AMINOINDAZOLE DERIVATIVES

Tadayuki Ibuki; Taisuke Sugihara; Hiromu Kawakubo, and Takanori Sone, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

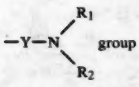
Division of Ser. No. 569,524, Jan. 9, 1984, Pat. No. 4,474,964, which is a continuation of Ser. No. 302,989, Sep. 17, 1981, abandoned. This application Jul. 31, 1984, Ser. No. 636,420
Claims priority, application PCT Int'l Appl., Sep. 18, 1980, PCT128610/1980; Sep. 19, 1980, PCT129090/1980
Int. Cl.[4] C07D *231/56, 401/06, 401/12, 403/12*
U.S. Cl. 546—187 5 Claims

1. A compound of the formula (I):



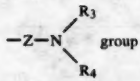
wherein

W_1 is a



wherein Y is a C_{1-6} alkylene group or a C_{1-6} alkylene group having a C_{1-6} alkyl group substituent; and R_1 and R_2 each independently is a hydrogen atom or a C_{1-6} alkyl group and R_1 and R_2 may form, together with the adjacent nitrogen atom, a C_{4-6} fully saturated heterocyclic ring or a C_{4-6} fully saturated heterocyclic ring containing an additional nitrogen atom, and said fully saturated heterocyclic rings may have at least one C_{1-6} alkyl group, hydroxyl group or halogen atom as a substituent thereon; and

W_2 is a



wherein Z is a C_{1-6} alkylene group or a C_{1-6} alkylene group having a C_{1-6} alkyl group substituent; and R_3 and R_4 each independently is a hydrogen atom or a C_{1-6} alkyl group and R_3 and R_4 may form, together with the adjacent nitrogen atom, a C_{4-6} fully saturated heterocyclic ring or a C_{4-6} fully saturated heterocyclic ring containing an additional nitrogen atom, and said fully saturated heterocyclic rings may have at least one C_{1-6} alkyl group, hydroxyl group or halogen atom as a substituent thereon;

or a pharmaceutically acceptable acid addition salt thereof.

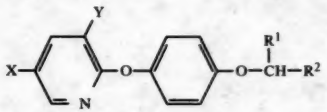
4,585,870

SUBSTITUTED PYRIDYL-PHENYL ETHERS

Heinz Förster, Wuppertal; Erich Klauke, Odenthal; Uwe Priesnitz, Solingen; Hans-Jochem Riebel, Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 495,883, May 18, 1983, Pat. No. 4,518,416.
This application Feb. 7, 1984, Ser. No. 577,902
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 3221214; Jan. 4, 1983, 3300141
Int. Cl.[4] C07D *213/61*
U.S. Cl. 546—302 13 Claims

1. A substituted pyridyl-phenyl ether of the formula



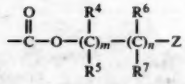
in which

X represents trifluoromethyl or chlorine,

Y represents hydrogen or chlorine,

R^1 represents hydrogen or methyl and

R^2 represents the radical of the formula



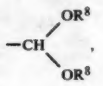
in which

R^4, R^5, R^6 and R^7 independently of one another represent hydrogen or alkyl with 1 to 4 carbon atoms,

m represents 1 or 2,

n represents 0 or 1 and

Z represents a radical of the formula



in which R^8 represents alkyl with 1 to 4 carbon atoms or the two radicals R^8 together represent an alkylene chain with 2 to 3 carbon atoms.

4,585,871

PROCESS FOR OXIDIZING HALOPYRIDINES TO HALOPYRIDINE-N-OXIDES

Max M. Boudakian, Pittsford, N.Y., assignor to Olin Corporation, Cheshire, Conn.

Filed Mar. 26, 1982, Ser. No. 362,707
Int. Cl.[4] C07D *213/18*
U.S. Cl. 546—345 11 Claims

1. A method of producing a 2-halopyridine-N-oxide comprising

reacting at a temperature from about 30° C. to about 120° C. (a) hydrogen peroxide, (b) a 2-halopyridine selected from the group consisting of 2-chloropyridine and 2-bromopyridine, and (c) acetic acid in the presence of a catalyst selected from the group consisting of alkali metal bisulfate, ammonium bisulfate, and mixtures thereof, in order to produce the corresponding 2-halopyridine-N-oxide; said reaction carried out by employing from about 0.5 to about 5.0 moles of H_2O_2 per mole of 2-halopyridine; employing from about 0.5 to about 3.0 moles of acetic acid per mole of 2-halopyridine, and employing from about

0.08 to about 0.8 moles of catalyst per mole of 2-halopyridine.

4,585,872

CEPHEM INTERMEDIATES

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Gotto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

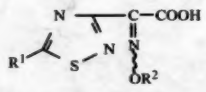
Division of Ser. No. 213,351, Dec. 5, 1980, Pat. No. 4,447,429, which is a division of Ser. No. 50,216, Jun. 20, 1979, Pat. No. 4,268,509. This application Jan. 16, 1984, Ser. No. 571,380

Claims priority, application United Kingdom, Jul. 10, 1978, 29357/78; Dec. 29, 1978, 50334/78

Int. Cl.[4] **C07D** *285/08*

U.S. Cl. 548—128 **9 Claims**

1. A compound of the formula



wherein

R^1 is amino or a protected amino and

R^2 is lower alkyl,

and its reactive derivative at the carboxy group selected from the group consisting of acid halide, acid anhydride, acid azide, amide and ester, and salt thereof.

4,585,873

NOVEL HYPOTENSIVE IMIDAZOTHIADIAZOLEALKENECARBOXAMIDES

Axel Ingendoh, Velbert; Horst Meyer, Wuppertal, and Bernward Garthoff, Hilden, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

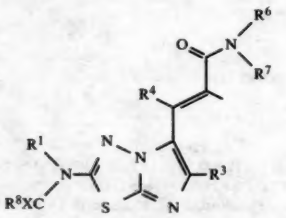
Filed Feb. 22, 1983, Ser. No. 468,737

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208437

Int. Cl.[4] **A61K** *31/425;* **C07D** *277/00, 513/04, 513/22*

U.S. Cl. 548—130 **8 Claims**

1. An imidazothiadiazolealkenecarboxamide of the formula



in which

R^1 represents hydrogen, phenyl, or phenyl substituted by halogen, trifluoromethyl, alkyl, alkoxy, alkylmercapto or alkylamino, each having 1 to 4 carbon atoms in the alkyl and alkoxy radicals, or by amino, or

R^1 represents an unsubstituted hydrocarbon radical having up to 12 carbon atoms which is uninterrupted by hetero atoms or interrupted once or twice by O, N, NH, N-alkyl having 1 to 4 C atoms, N-phenyl or N-benzyl, and being unsubstituted or substituted by hydroxyl, alkyl having 1 to 4 C atoms, trifluoromethyl, halogen, phenyl or alkoxycarbonyl having up to 5 C atoms or by dialkylamino, each alkyl radical containing 1 to 4 carbon atoms, the two alkyl radicals being unconnected or forming with the nitrogen atom a 5 to 7-membered ring, containing no further heteroatoms or said 5 to 7 membered ring containing a further heteroatom from the group comprising O, NH or N-alkyl having 1 to 4 C atoms, and which is unsubstituted or substituted by halogen or alkyl having 1 to 4 C atoms,

R^8 has the meaning indicated for R^1 and being identical to or different from R^1, and

X representing oxygen, sulphur or the radical NR^9R^{10},

R^9 and R^{10} being identical or different and representing hydrogen, phenyl, benzyl or alkyl having 1 to 6 carbon atoms, the alkyl and phenyl radicals being unsubstituted or substituted by halogen or alkoxy having 1 to 4 carbon atoms; or represents the radical SO_nR^{11}, n denoting 1 or 2 and R^{11} having the meaning indicated for R^1 and being identical to or different from R^1, or R^1 and R^2 together represent a group of the formula $=C(R^{12})(Y—R^{13})$, Y representing oxygen, sulphur, NH or N-alkyl having 1 to 4 C atoms, and R^{12} and R^{13} each having the meaning indicated for R^1 and being identical to or different from R^1, R^{12} and R^{13} being unconnected or R^{12} and R^{13} connected together to form, with inclusion of $=C—Y$, a 5 to 7-membered ring having no further heteroatom or contains a further heteroatom from the group comprising O, S, NH or N-alkyl having 1 to 4 C atoms,

R^3 has the meaning indicated for R^1 and is identical to or different from R^1 or represents unsubstituted phenyl, furyl, thienyl, pyrimidyl or pyridyl, or phenyl, furyl, thienyl, pyrimidyl or pyridyl substituted by 1, 2 or 3 identical or different substituents from the group comprising halogen, nitro, trifluoromethyl, phenyl, alkyl, alkoxy, dialkylamino or SO_n-alkyl, wherein n is 0, 1 or 2, the alkyl and alkoxy radicals mentioned each containing 1 to 4 carbon atoms,

R^4 represents hydrogen, trifluoromethyl or alkyl,

R^5 represents hydrogen, cyano, halogen, nitro, alkyl, SO_n-alkyl or CXR^8, the alkyl radicals mentioned containing 1 to 4 carbon atoms and n, X and

R^8 having the meaning indicated above, and

R^6 and R^7 each have the meaning indicated for R^1 and are identical to or different from R^1 or,

R^6 and R^7 being unconnected or connected with the nitrogen atom form a 5 or 7-membered saturated or unsaturated ring, the ring containing no further heteroatoms or contains 1 or 2 further heteroatoms from the group comprising oxygen, sulphur or nitrogen, the nitrogen being unsubstituted or substituted by hydrogen, alkyl having 1 to 4 carbon atoms, phenyl or benzyl and this 5 to 7-membered ring being unsubstituted or substituted by 1, 2 or 3 identical or different substituents from the group comprising halogen, trifluoromethyl, phenyl, benzyl, alkyl, alkoxy, alkoxyalkyl, hydroxyalkyl or alkoxycarbonyl, the alkyl and alkoxy radicals mentioned each containing 1 to 4 C atoms, this 5 to 7-membered ring being uncondensed or condensed with an aromatic ring having 6 to 10 carbon atoms, which in turn is unsubstituted or substituted by halogen, trifluoromethyl, nitroalkyl or alkoxy each having 1 to 4 C atoms,

or a pharmaceutically acceptable acid addition salt thereof.

4,585,874

PROCESS FOR PREPARING PENEM DERIVATIVES

Marco Alpegiani; Angelo Bedeschi; Maurizio Foglio; Giovanni Franceschi, and Ettore Perrone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

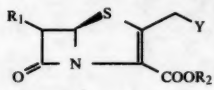
Filed Dec. 6, 1983, Ser. No. 558,629

Claims priority, application United Kingdom, Dec. 8, 1982, 8235058; Aug. 27, 1983, 8323129

Int. Cl.[4] **C07D** *499/00*

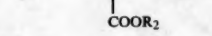
U.S. Cl. 546—272 **14 Claims**

1. A process for the preparation of a (5R)-penem derivative of formula I:



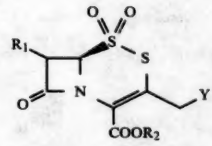
I

wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 12 carbon atoms, or a cycloalkyl group having 4 to 7 carbon atoms, said alkyl and cycloalkyl groups optionally substituted by hydroxy, protected hydroxy, amino, protected amino, mercapto, protected mercapto or cyano; R_2 represents a hydrogen atom or a carboxy protecting group selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, halo-substituted alkyl group having 1 to 6 carbon atoms, phenyl, substituted phenyl, phenylalkyl wherein the alkyl has 1 to 6 carbon atoms, substituted phenylalkyl wherein the alkyl has 1 to 6 carbon atoms, phenyloxyalkyl wherein the alkyl has 1 to 6 carbon atoms, benzyhydryl, o-nitrobenzhydryl, acetonyl, triimethylsilyl, diphenyl-t-butyl-silyl, dimethyl-t-butyl-silyl, acetoxymethyl, pivaloyloxymethyl and phthalidyl; and Y represents a hydrogen atom, a halogen atom, hydroxy, protected hydroxy, an alkyl group having 1 to 4 carbon atoms, formyloxy, acetoxy, carbamoyloxy, N-alkyl substituted carbamoyloxy, alkoxy having 1 to 4 carbon atoms, 1-pyridinium, carbamoylpyridinium or methyltetrazolylthio; characterized in that a 2-thiacephem derivative of formula II:



II

wherein R_1, R_2 and Y are as above defined, dissolved in an inert organic solvent is submitted, at a temperature of from 0° to 60° C., to an oxidative reaction using as oxidizing agent a peracid, to give the corresponding sulphone of formula III:



III

wherein R_1, R_2 and Y are as above defined, which is finally submitted to a desulphurative ring contraction with extrusion of SO_2 by gentle heating in an inert organic solvent or by standing at room temperature so that the desired (5R)-penem derivative of formula I is obtained.

4,585,875

PROCESS FOR PREPARING 4,4-BIS-BENZ-OX(-THI,-IMID)-AZOL-2-YL-STILBENES

Lorenz Heiss, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

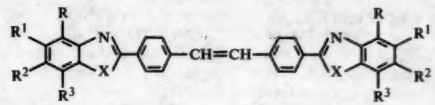
Filed Feb. 16, 1984, Ser. No. 580,865

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3305578

Int. Cl.⁴ C07D *277/62, 263/62, 235/04*

U.S. Cl. 548—156 **1 Claim**

1. A process for preparing 4,4'-bis-benz-ox(-thi,-imid)-azol-2-yl-stilbenes of the formula



wherein R, R^1, R^2 and R^3 may be the same or different from each other and denote hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, chlorine, bromine, nitro or sulfo and X denotes oxygen, sulfur or NH, which comprises reacting a (4-chloromethyl)-iminobenzoic acid alkyl ester of the formula

wherein R denotes C_1–C_4-alkyl or C_1–C_4-alkoxyethyl, or HCl salts thereof, with o-aminophenol, o-aminothiophenol or o-phenylene diamine and reacting the resulting 2-benzox(-thi,-imid)-azolyl-4-chloromethyl-benzenes with potassium hydroxide or sodium hydroxide in a polar aprotic solvent.

4,585,876

NOVEL XANTHONES AND THIOXANTHONES

Walter Fischer, Reinach, Switzerland; Jürgen Finter, Freiburg, Fed. Rep. of Germany, and Hans Zweifel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

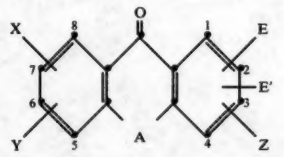
Filed Nov. 14, 1983, Ser. No. 551,768

Claims priority, application Switzerland, Nov. 25, 1982, 6872/82

Int. Cl.⁴ C07D *311/86, 335/16, 495/04, 491/04*

U.S. Cl. 548—423 **7 Claims**

1. A compound of the formula I



(I)

in which A is —O— or —S—, X and Y independently of one another are hydrogen, C_{1-20}-alkyl, halogen, —OR', —SR' or $—NO_2$, Z is hydrogen, C_{1-4}-alkyl, halogen, —OR', —SR', $—NO_2$, $—NH_2$, —OH or $—NHCOCH_3$, E and E' together are —CO—O—CO— or —CO—N(R)—CO—, R is hydrogen, C_{1-20}-alkyl, phenyl, alkylphenyl having 1–4 C atoms in the alkyl moiety, phenethyl, benzyl, cyclohexyl, $—(CH_2)_n—Q$, C_{2-6}-alkenyl, propargyl, $—N(CH_3)_2$, —OH or C_{1-10}-alkoxy, R' is C_{1-20}-alkyl, phenyl, halogenophenyl, nitrophenyl, alkyl- or alkoxy-phenyl having in each case 1–4 C atoms in the alkyl or alkoxy moiety, benzyl or phenethyl, n is the number 1, 2 or 3, Q is —OH, $—N(C_{1-2}\text{-alkyl})_2$, $—SO_3^-M^+$, $—OCOCH{=}CH_2$ or $—OCOC(CH_3){=}CH_2$ and M^+ is an alkali metal cation.

4,585,877

PROCESS FOR PREPARING 1,8-DIETHYL-1,3,4,9-TETRAHYDROPYRANO(3,4-B)-INDOLE-1-ACETIC ACID, ETODOLAC

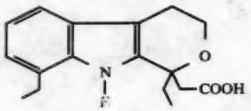
Christopher A. Demerson, Plainsboro, and Leslie G. Humber, North Brunswick, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed May 6, 1985, Ser. No. 730,963

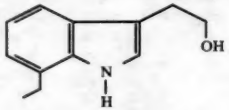
Int. Cl.[4] C07D *491/052, 209/12*

U.S. Cl. 548—432 **4 Claims**

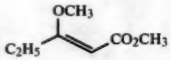
1. A process for preparing the compound 1,8-diethyl-1,3,4,9-tetrahydropyrano[3,4-b]indole-1-acetic acid of the formula



comprising reacting the compound 7-ethyltryptophol of formula



with 3-methoxy-2-pentenoic acid, methyl ester of formula



and hydrolyzing the ester with base.

4,585,878

N-SUBSTITUTED 1,4-DIKETOPYRROLO-[3,4-C]-PYRROLES

Max Jost, Oberwil; Abul Iqbal, Ettingen, and Alain C. Rochat, Fribourg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

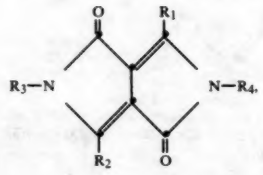
Filed Jun. 18, 1984, Ser. No. 621,649

Claims priority, application Switzerland, Jun. 29, 1983, 3568/83

Int. Cl.[4] C07D *487/04*

U.S. Cl. 548—453 **6 Claims**

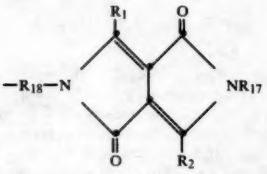
1. A compound of the formula I



(I)

in which R_1 and R_2 are phenyl or said phenyl substituted by one or two fluorine, chlorine or bromine atoms or mixtures thereof, by one, two or three methyl or methoxy groups or mixtures thereof with chlorine atoms, by cyano, by dimethylamino, by trifluoromethyl, by tert-butyl, by hydroxy, by alkoxycarbonyl of 2 to 3 carbon atoms, by benzoylamino or by acetyl; naphthyl or said naphthyl substituted by methoxy; anthryl or phenanthryl; and

R_3 and R_4 are both other than hydrogen and are C_1–C_{12}-alkyl, C_2–C_{13}-alkoxycarbonyl, carboethoxymethyl, cyanomethyl, benzoyl, benzyl, allyl, phenyl or said phenyl substituted by chlorine or by bromine, or the group of the formula



in which R_1 and R_2 are as defined above, R_{17} is hydrogen and R_{18} is a divalent radical derived from a C_1–C_8-dihaloalkane, C_1–$_{10}$-dicarboxylic acid halide, phenylene dihalide or xylylene dihalide.

4,585,879

PROCESS FOR PREPARING INDOLINE-2-CARBOXYLIC ACIDS VIA ALPHA-HYDROXY-2-NITROBENZENEPROPANOIC ACID

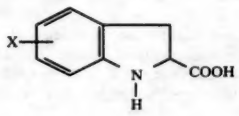
Michael W. Winkley, and Ronald J. McCaully, both of Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 565,083, Dec. 23, 1983, abandoned. This application Feb. 11, 1985, Ser. No. 700,371

Int. Cl.[4] C07D *209/42*

U.S. Cl. 548—491 **7 Claims**

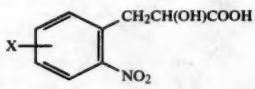
1. A process for producing an indoline-2-carboxylic acid of the formula:



I

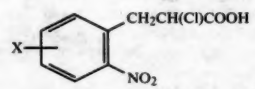
wherein X is hydrogen, chlorine, bromine, C_{1-4} alkyl or C_{1-4} alkoxy, which comprises,

(a) reacting an α-hydroxy-2-nitrobenzenepropanoic acid of the formula:



III

wherein X is as defined above, with a Vilsmeier chlorinating reagent in which the chlorinating agent thereof is selected from a group consisting of thionyl chloride, oxalyl chloride, phosphorus oxychloride, phosphorus pentachloride and sulfuryl chloride and the amide thereof is selected from a group consisting of dimethylformamide, diethylformamide, dimethylacetamide and diethylacetamide, said reaction being run at temperatures of at least 20° C., in order to obtain an α-chloro-2-nitrobenzenepropanoic acid of the formula:



IV

(b) reducing the nitro group of said α-chloro-2-nitrobenzenepropanoic acid (IV) to an amino group; and

(c) cyclizing the resulting α-chloro-2-aminobenzenepropanoic acid in aqueous base.

4,585,880

PROCESS FOR THE PREPARATION OF 1-(4-CHLOROBENZOYL)-5-METHOXY-2-METHYL-3-INDOLEACETOXYACETIC ACID

Karl-Heinz Boltze, Borod, Fed. Rep. of Germany, assignor to Troponwerke GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 469,674

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206889

Int. Cl.⁴ C07D *209/28*

U.S. Cl. 548—501 **1 Claim**

1. A process for the production of 1-(4-chloro-benzoyl)methoxy-2-methyl-3-indoleacetoxyacetic acid which comprises reacting, in the presence of methylene chloride, 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indolacetic acid with diisopropylammonium glycolate, with the exclusion of moisture, and in the presence of dicyclohexylcarbodiimide, separating the diisopropylammonium salt from the reaction medium, then converting said diisopropylammonium salt to the free acid by acidification.

4,585,881

2,5-DIHYDRO-5-ARYLIMINOPYRROLE DERIVATIVES AND THEIR PREPARATION

Rainer Becker, Bad Durkheim, and Bruno Wuerzer, Otterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

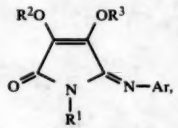
Filed Feb. 29, 1984, Ser. No. 584,864

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308297

Int. Cl.⁴ C07D *207/436*

U.S. Cl. 548—544 **5 Claims**

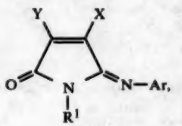
1. A 2,5-dihydro-5-aryliminopyrrole derivative of the formula



(I)

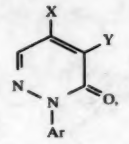
where R^1 is hydrogen or C_1–C_4-alkyl, R^2 and R^3 are each C_1–C_4-alkyl, and Ar is unsubstituted phenyl or phenyl substituted by cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy.

5. A process for the manufacture of 2,5-dihydro-5-aryliminopyrrole derivatives of the formula



(Ia)

where R^1 is hydrogen, X is C_1–C_4-alkyl, C_1–C_{10}-alkoxy, dialkylamino, where alkyl is of 1 to 10 carbon atoms or phenyl which is unsubstituted or substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, or C_1–C_4-haloalkyl, Y is hydrogen, halogen or C_1–C_{10}-alkoxy and Ar is unsubstituted phenyl or phenyl substituted by cyano, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy, wherein a base is added to a pyridazinone of the formula



(IIa)

where X, Y and Ar have the above meanings in the presence of an inert solvent and at from 0° to 100° C. to convert the pyridazinone (IIa) to a 2,5-dihydro-5-aryliminopyrrole derivative of the formula Ia.

4,585,882

SULFIDO(DISULFIDO)BIS(N,N-SUBSTITUTED DITHIOCARBAMATO)W(VI) COMPLEXES

Edward I. Stiefel, Bridgewater; Wie-Hin Pan, and Thomas R. Halbert, both of Annandale, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 27, 1984, Ser. No. 635,282

Int. Cl.⁴ C07F *11/00*

U.S. Cl. 556—38 **12 Claims**

1. Mononuclear, seven-coordinate, neutral sulfido(disulfido)bis(N,N-substituted dithiocarbamato)W(VI) complexes containing only seven sulfur atoms in the W coordination sphere.

4,585,883

PREPARATION OF ORGANOMETALATES

John R. Briggs, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 28, 1984, Ser. No. 594,389

Int. Cl.⁴ C07F *9/00, 11/00*

U.S. Cl. 556—42 **30 Claims**

1. A process for the preparation of an organometalate having at least one organic-containing cation and metalate anion of the structure

$$[(A)_qM(O)]^{a-}$$

wherein M is a polyvalent metal having a functional positive oxidation state, A represents one or more substituents to fill the remaining valencies (q) of M, and a− is the negative charge of the anion, comprising dissolving in a solvent-containing reaction menstruum a soluble salt containing the organic-containing cation; and contacting said soluble salt with a heavy metal salt of said metalate anion to produce the organometalate, said solvent being a solvent for the organometalate under the conditions during the contact, and to co-produce a salt of the heavy metal cation and the anion provided by the salt having the organic-containing cation, said salt of the heavy metal cation being substantially insoluble in the reaction menstruum under the conditions during the contact.

4,585,884

SILYLATED COMPOSITIONS, AND DEUTERATED HYDROXYL SQUARAINE COMPOSITIONS AND PROCESSES

John W. P. Lin, and Lesley P. Dudek, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

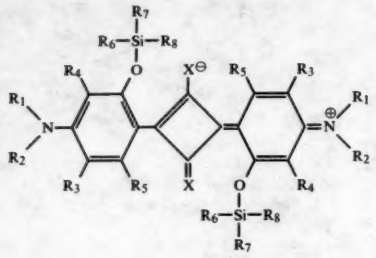
Filed May 23, 1984, Ser. No. 613,137

Int. Cl.⁴ C07F *7/10*

U.S. Cl. 556—413 **19 Claims**

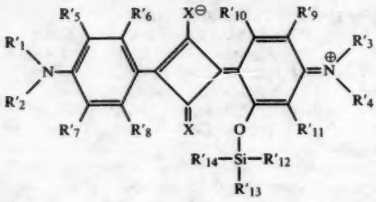
1. Silylated compositions of matter selected from the group consisting of:

I.



SYMMETRICAL

II.



UNSYMMETRICAL

wherein R_1 and R_2 are independently selected from alkyl groups, aromatic groups, cyclic groups, and non-cyclic groups, R_3, R_4 and R_5 are selected from the group consisting of hydrogen, alkyl groups, halides, alkoxy, alkyl carboxy, R_6, R_7 and R_8 are selected from the group consisting of alkyl substituents, halogenated substituents, and oxygenated substituents, and X is selected from the group consisting of oxygen, sulfur, and selenium, R'_1, R'_2, R'_3, and R'_4, are independently selected from alkyl groups, aromatic groups, cyclic groups, and non-cyclic groups, providing that at least one of these groups is dissimilar, R'_5, R'_6, R'_7, R'_8, R'_9, R'_{10}, and R'_{11}, are independently selected from the groups consisting of hydrogen, alkyl groups, halides, alkoxy, and alkyl carboxy, and R'_{12}, R'_{13}, and R'_{14}, are independently selected from the groups consisting of alkyl substituents, halogenated substituents, and oxygenated substituents.

4,585,886

9-SUBSTITUTED CARBACYCLIN ANALOGS

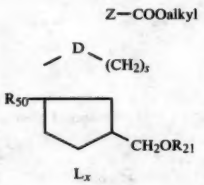
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 360,090, Mar. 19, 1982, Pat. No. 4,490,555. This application Sep. 27, 1984, Ser. No. 655,402

Int. Cl.[4] **C07C** *177/00*

U.S. Cl. 556—441 **1 Claim**

1. A compound of the formula



wherein R_{50} is chloro, iodo, trifluoromethyl or —COOH;
wherein s is the integer one or 2;
wherein D is cis—C═C(R_3)—, trans—C═C(R_3)— or >$CHCH_2$, wherein R_3 is hydrogen or fluoro;
wherein Z is:
(1) —CH_2—$(CH_2)_f$—C(R_4)$_2$ wherein each R_4 is the same and is hydrogen or fluoro, and f is zero, one, 2 or 3;
(2) trans—CH_2—CH═CH—; or
(3) —(Ph)—$(CH_2)_g$— wherein Ph is 1,2-, 1,3-, or 1,4-phenylene and g is zero, one, 2 or 3; with the proviso that when Z is —(Ph)—$(CH_2)_g$—, R_3 is hydrogen;
wherein alkyl is a lower alkyl group of from one to 4 carbon atoms;
wherein L_x is H,H; α—OR_{12},β—H; α—H,β—OR_{12}; α—CH_2OR_{12},β—H; α—H,β—CH_2OR_{12} wherein R_{12} is a hydroxyl protecting group; and wherein R_{21} is a silyl containing protecting group.

4,585,885

CYCLOHEXENONE DERIVATIVES AND PROCESS FOR MAKING SAME

Kurt Bernhard, Lupsingen; Robert K. Müller, Basel, and Robert Spruijtenburg, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

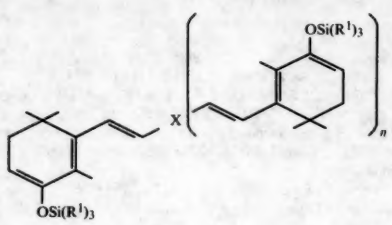
Filed Aug. 19, 1983, Ser. No. 524,541

Claims priority, application Switzerland, Aug. 20, 1982, 4983/82; Jun. 21, 1983, 3392/83

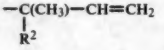
Int. Cl.[4] **C07F** *7/04, 7/08, 7/18*

U.S. Cl. 556—436 **2 Claims**

1. Compounds of the general formula



wherein n stands for the number 0 and X stands for a group



or n stands for the number 1 and X stands for the 6,11-dimethylhexadeca-2,4,6,8,10,12,14-heptaene-2,15-diyl group, the symbols R^1 have the same or different significances and denote alkyl groups, and the symbol R^2 represents a trialkylsiloxy group —$OSi(R^1)_3$ or an ether group.

4,585,887

PROCESS FOR THE PRODUCTION OF OPTICALLY ACTIVE 3-AMINOCARBOXYLIC ACID ESTERS

Synèse Jolidon, Therwil, and Thomas Meül, Visp, both of Switzerland, assignors to Lonza Ltd., Gampel, Switzerland

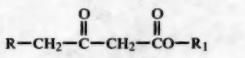
Filed Dec. 4, 1984, Ser. No. 677,986

Claims priority, application Switzerland, Dec. 7, 1983, 6532/83

Int. Cl.[4] C07C *101/18*

U.S. Cl. 560—38 11 Claims

1. Process for the production of an optically-active 3-aminocarboxylic acid ester from a β-keto acid ester, the β-ketonic acid esters compounds having the formula:



wherein R is H, a straight chained alkyl, which is substituted or unsubstituted, a branched alkyl, which is substituted or unsubstituted, or substituted or unsubstituted benzyl, and R_1 is a straight chained alkyl, which is substituted or unsubstituted, a branched alkyl, which is substituted or unsubstituted, or substituted or unsubstituted benzyl, comprising:

(a) converting the β-keto acid ester with a chiral amine into the corresponding enamine;

(b) converting the corresponding enamine by hydrogenation in the presence of a platinum catalyst into a mixture of corresponding N-substituted amino acid esters;

(c) converting the mixture of corresponding N-substituted amino acid esters by introducing HCl gas into a mixture of corresponding hydrochlorides;

(d) neutralizing the mixture of corresponding hydrochlorides; and

(e) liberating and isolating from the mixture of neutralized products by hydrogenolysis, in the presence of a palladium catalyst, the desired optically-active 3-amino-carboxylic acid ester.

4,585,889

CARBONYLATION PROCESS FOR THE PRODUCTION OF MONOESTERS AROMATIC DICARBOXYLIC ACIDS FROM PHOSPHONIUM SALTS

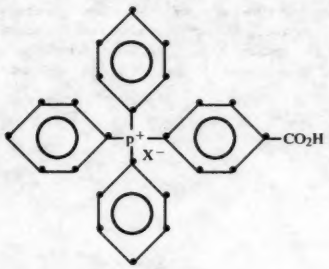
Carl M. Lentz, Mt. Carmel; James R. Overton, and David D. Cornell, both of Kingsport, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1985, Ser. No. 695,496

Int. Cl.[4] C07C *67/36*

U.S. Cl. 560—90 9 Claims

1. A process for the preparation of monoesters of aromatic dicarboxylic acids comprising reacting a carboxyphenyl-triaryl phosphonium salt of the formula



wherein X represents a weak acid anion, with (i) carbon monoxide and (ii) an aliphatic alcohol having up to 12 carbon atoms in a base reaction medium having a pK_b greater than about 8.0.

2. The process of claim 1 wherein said alcohol comprises a lower alkanol, ethylene glycol, propylene glycol, neopentyl glycol, ethylene glycol monoacetate, or a mixture thereof.

4,585,888

SYNTHETIC METHOD FOR A CHIRAL 3-(SUBSTITUTED-PHENYL)-4-(3-HYDROXYPROPYL)-CYCLOHEXANOL

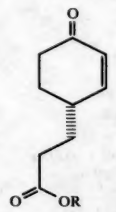
Frank J. Urban, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,616

Int. Cl.[4] C07L *69/76*

U.S. Cl. 560—53 14 Claims

1. A carbohexacyclic compound having the stereochemical formula



(III)

wherein R is (C_1–C_3)alkyl.

4,585,890

PROCESS FOR PRODUCING ETHYLENE GLYCOL AND/OR GLYCOLIC ACID ESTER, CATALYST COMPOSITION USED THEREFOR, AND PROCESS FOR PRODUCTION THEREOF

Haruhiko Miyazaki; Taizo Uda; Koichi Hirai; Yasuo Nakamura, all of Ube; Harumi Ikezawa, Onoda, and Takanori Tsuchie, Ube, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Division of Ser. No. 370,555, Apr. 21, 1982, Pat. No. 4,440,873. This application Mar. 6, 1984, Ser. No. 586,753

Claims priority, application Japan, Apr. 30, 1981, 56-64015

Int. Cl.[4] C07C *67/333, 31/20*

U.S. Cl. 560—179 7 Claims

1. In a process for producing ethylene glycol and/or a glycolic acid ester which comprises hydrogenating an oxalate diester in the vapor phase at an elevated temperature in the presence of a hydrogenation catalyst, the improvement wherein the catalyst is a catalyst composition composed of a reduction product of copper-containing silica gel formed by contacting an ammine complex of copper with colloidal silica sol.

4,585,891

PROCESS FOR THE PRODUCTION OF DIHYDROCARBYL OXALATES

George E. Morris, Egham, England, assignor to The British Petroleum Company P.L.C., London, England

PCT No. PCT/GB83/00334, § 371 Date Jul. 20, 1984, § 102(e) Date Jul. 20, 1984, PCT Pub. No. WO84/02340, PCT Pub. Date Jun. 21, 1984

PCT Filed Dec. 15, 1983, Ser. No. 634,099

Claims priority, application United Kingdom, Dec. 15, 1982, 8235695

Int. Cl.[4] C07C *67/36, 27/00, 29/48*

U.S. Cl. 560—204 17 Claims

1. A process for the production of a dihydrocarbyl oxalate which process comprises reacting, under substantially anhydrous conditions and at a temperature above ambient, a dihydrocarbyl peroxide with carbon monoxide in the presence of an effective amount of a catalyst comprising palladium in elemental or compound form and a copper compound.

4,585,892

PROCESS FOR THE ENANTIOSELECTIVE PRODUCTION OF α-ALKYLATED, ACYCLIC α-AMINOCARBOXYLIC ACIDS

Dieter Seebach, and Reto Naef, both of Zurich, Switzerland, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

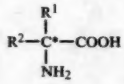
Filed Sep. 27, 1984, Ser. No. 654,935

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1983, 3334855

Int. Cl.[4] C07C *99/00*

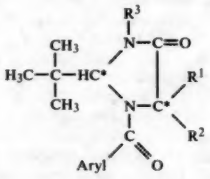
U.S. Cl. 562—443 20 Claims

1. A process for the enantioselective production of α-aminocarboxylic acids of the formula



(I)

where * is a center of asymmetry, R^1 is methyl, ethyl, n-propyl, n-butyl, allyl, benzyl, or a methyl, ethyl, propyl, isopropyl, butyl, sec. butyl, amyl, hexyl, methoxy, ethoxy, propoxy or butoxy substituted benzyl group and R^2 is a methyl, ethyl, n-propyl, i-propyl, n-butyl, secondary butyl, i-butyl, methoxymethyl, methylmercaptomethyl, 2-methylmercaptoethyl, 2-ethylmercaptoethyl, phenyl, or benzyl or a phenyl group substituted on the ring with 1 to 3 alkyl or alkoxy groups or a benzyl group substituted on the ring with 1 to 3 alkyl or alkoxy groups, fluorine or bromine comprising acid saponifying an imidazolidin-4-one of the formula



wherein R^3 is methyl or ethyl.

4,585,893

PROCESS FOR PRODUCING 4-HOMOISOTWISTANE-3-CARBOXYLIC ACID

Yoshiaki Fujikura, Ichikaimachi; Naotake Takaishi, and Yoshiaki Inamoto, both of Utsunomiya, all of Japan, assignors to KAO Corporation, Tokyo, Japan

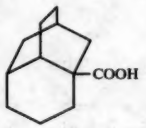
Filed Jul. 18, 1983, Ser. No. 514,847

Claims priority, application Japan, Jul. 22, 1982, 57-128234

Int. Cl.[4] C07C *61/12*

U.S. Cl. 562—499 6 Claims

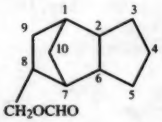
1. A process for producing 4-homoisotwistane-3-carboxylic acid of the formula (I):



(I)

comprising:

(a) contacting tricyclo (5.2.1.$0^{2,6}$) dec-8-yl-methylformate of formula (II)



(II)

with about 0.5 to 24 mol of a strongly acidic inorganic catalyst per mol of the compound of formula (II).

4,585,894

PROCESS FOR PRODUCING 9-CARBAMOYL FLUORENE DERIVATIVES

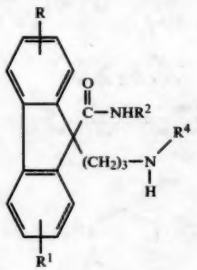
Derek Johnson, and Alan C. Spreadbury, both of Warrington, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 19, 1983, Ser. No. 543,648

Int. Cl.[4] C07C *102/00, 103/28*

U.S. Cl. 564—164 4 Claims

1. A process for producing a compound of the formula



(I)

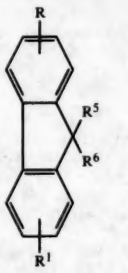
wherein

R and R^1 independently are hydrogen, C_1–C_4 alkyl or halo;

R^2 is hydrogen or C_1–C_6 alkyl; and

R^4 is hydrogen, C_1–C_6 alkyl, —CH_2C_2–C_5 alkenyl or phenyl C_1–C_3 alkyl; or a salt thereof;

which comprises reacting a compound of the formula

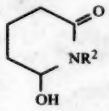


(II)

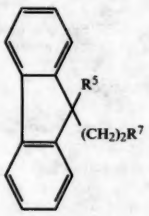
wherein

R and R^1 are as defined above; and

R^5 and R^6, together, form the ring



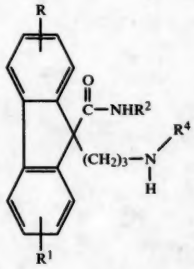
with an amine of the formula R^4NH_2 and a reducing agent, or isolating from reaction of the compound of formula (II) with amine, an intermediate of formula



(III)

where R^7 is —CH(OH)NHR^4 or —CH=NR^4 and reducing the said intermediate.

4. A process for preparing a compound of formula (I)



(I)

wherein

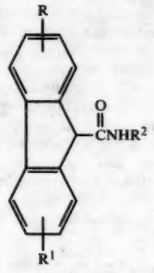
R and R^1 independently are hydrogen, C_1–C_4 alkyl or halo;

R^2 is hydrogen or C_1–C_6 alkyl; and

R^4 is hydrogen, C_1–C_6 alkyl, —CH_2C_2–C_5 alkenyl or phenyl C_1–C_3 alkyl; or a salt thereof;

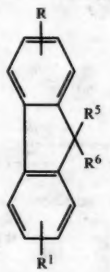
which comprises

(a) reacting a compound of the formula



wherein

R, R^1 and R^2 are as defined in claim 1, with acrolein under basic conditions to provide a compound of formula



(II)

wherein R^5 and R^6 are as defined in claim 1, and

(b) reacting the resulting compound with an amine of the formula R^4NH_2 and a reducing agent.

4,585,895

PROCESSES FOR THE PREPARATION OF MIXED SQUARAINE COMPOSITIONS

Kock-Yee Law, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1985, Ser. No. 703,569

Int. Cl.[4] C07C *85/00, 85/02, 85/06*

U.S. Cl. 564—307 **29 Claims**

1. An improved process for the preparation of mixed squaraine compositions which comprises reacting a dialkyl squarate, a dialkyl aniline, and a dialkylhaloaniline in the presence of an aliphatic alcohol and an acid catalyst.

4,585,896

PROCESS FOR THE PRODUCTION OF AN AMINOPHENOL

Haruhisa Harada; Hiroshi Maki, and Shigeru Sasaki, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 18, 1985, Ser. No. 745,974

Claims priority, application Japan, Jun. 18, 1984, 59-125891; Mar. 23, 1985, 60-58964

Int. Cl.[4] C07C *85/06*

U.S. Cl. 564—403 **6 Claims**

1. In a process for the production of an aminophenol which comprises reacting a divalent phenol and ammonia in the absence of a catalyst or in the presence of a water-soluble catalyst, then separating the reaction mixture after the reaction to recover a separated and recovered product containing an aminophenol and the unreacted divalent phenol, and separating and purifying the aminophenol from said separated and recovered product, the process for the production of an amino-

phenol which is characterized by, on separating and purifying said aminophenol, contacting said separated and recovered product with an aliphatic ether substantially incompatible with said aminophenol in an inert gas atmosphere at a temperature at which said separated and recovered product melts or higher, then cooling to induce the crystallization of the aminophenol, thereafter filtering and recovering to obtain a cake mainly composed of said aminophenol, further melting and contacting this cake with an aliphatic ether in an inert gas atmosphere in the co-presence of water and a surfactant, and then cooling to induce the crystallization of said aminophenol and recovering it.

4,585,897

PROCESS FOR PREPARATION OF FUEL ADDITIVES FROM ACETYLENE

Ellis K. Fields, River Forest; Mark L. Winzenburg, Naperville, and David A. De Marco, Aurora, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Aug. 24, 1984, Ser. No. 643,785

Int. Cl.[4] C07C *45/26*

U.S. Cl. 568—409 **7 Claims**

1. A process for the liquefaction of acetylene in a crude acetylene stream comprising acetylene, water, and at least one of methane, carbon dioxide, carbon monoxide, oxygen, nitrogen and hydrogen, wherein the water content of the stream is in the range of from about 0.1 (mole)% to about 70 (mole)% and the mole ratio of acetylene-to-water in the stream is from about 100:1 to about 1:35 in the presence of a zirconia-alumina catalyst wherein the alumina content is in the range from 1 (wt)% to about 10 (wt)%, the zirconia surface area of said catalyst is from about 10 to about 100 m^2/g, the surface alumina:zirconium (Al:Zr) atomic ratio is 0.01:1 to 20:1, at a temperature within the range of from about 200° to 500° C. and a pressure of from about 0.5 to 2.0 atmosphere, to form at least one of aromatic hydrocarbons and aromatic and aliphatic oxygenated products.

4,585,898

PREPARATION OF SUBSTITUTED BENZALDEHYDES

Roland L. Lau, and John S. Hudson, both of Columbia, S.C., assignors to Hardwicke Chemical Company, Elgin, S.C.

Filed Dec. 18, 1984, Ser. No. 683,027

Int. Cl.[4] C07C *45/63*

U.S. Cl. 568—433 **9 Claims**

1. In a process for preparing a 3-bromobenzaldehyde by reacting a benzaldehyde having a free 3-position with bromine chloride in the presence of aluminum chloride, the improvement which comprises conducting the reaction in the presence of about 0.3–0.9 mol of dibromomethane per mole of aluminum chloride.

4,585,899

HYDROGENATION OF CARBOXYLIC ACID COMPOUNDS TO ALDEHYDES USING MNO_2 ON GAMMA ALUMINA AS CATALYST

Abraham P. Gelbein, Morristown, and Robert Hansen, West Caldwell, both of N.J., assignors to Chem Systems Inc., Tarrytown, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,245

Int. Cl.[4] C07C *45/41*

U.S. Cl. 568—435 **11 Claims**

1. A process for the hydrogenation of an aromatic or aliphatic carboxylic acid or an ester thereof to the corresponding aldehyde, said carboxylic acid or ester being free of alpha hydrogens, which comprises reacting said carboxylic acid or ester with at least a 1:1 molar ratio of hydrogen at a temperature in the range of from 300° to 500° C. and at a pressure of from 200 mm Hg to 100 atm. in the presence of a manganese dioxide catalyst supported on a gamma-alumina.

4,585,900

HYDROGENATION OF CARBOXYLIC ACID COMPOUNDS TO ALDEHYDES USING CU/YTO AS CATALYST

Norman L. Holy; Abraham P. Gelbein, both of Morristown, and Robert Hansen, West Caldwell, all of N.J., assignors to Chem Systems Inc., Tarrytown, N.Y.

Filed Jan. 22, 1985, Ser. No. 693,246

Int. Cl.[4] C07C *45/41*

U.S. Cl. 568—435 **11 Claims**

1. A process for the hydrogenation of an aromatic or aliphatic carboxylic acid or an ester thereof to the corresponding aldehyde, said carboxylic acid or ester being free of alpha hydrogens, which comprises reacting said carboxylic acid or ester with at least a 1:1 molar ratio of hydrogen at a temperature in the range of from 300° to 500° C. and at a pressure of from 200 mm Hg to 100 atm. in the presence of an yttrium oxide catalyst which has been treated with copper, said catalyst comprising from 1 to 15 wt. % of copper and from 99 to 85 wt. % of yttrium, on an elemental basis.

4,585,901
EMI/RFI VAPOR DEPOSITED COMPOSITE SHIELDING PANEL

Walter J. Miller, Philadelphia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 579,332, Feb. 13, 1984, Pat. No. 4,544,571. This application Nov. 23, 1984, Ser. No. 674,127
Int. Cl.[4] B21D *39/00*; H01Q *17/00*
U.S. Cl. 174—35 MS **9 Claims**

1. A panel for shielding the passage of electromagnetic radio frequency radiation interference therethrough, comprising an electrically insulating substrate sheet material having a surface with a composite shielding coating thereon, said coating comprising:

(a) an adhesive layer of chromium or stainless steel bound to said surface by chemical bonds between molecules within said adhesive layer and molecules within said substrate sheet material, said layer having a thickness within the range of about 300 Angstroms to about 1000 Angstroms;

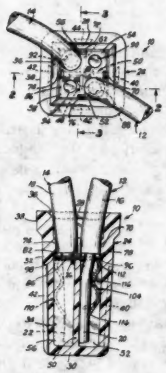
(b) an aluminum or copper shielding layer deposited onto the exterior of said adhesive coating having a thickness of from about 1,000 Angstroms to about 50,000 Angstroms; and

(c) an outermost chromium or stainless steel protective layer deposited onto the exterior of said shielding coating, said protective layer having a thickness of at least about 1,000 Angstroms to provide abrasion resistance and to prevent oxidation of the copper or aluminum shielding layer (b).

4,585,902
PUSH-IN ELECTRICAL WIRE CONNECTOR

Ronald G. Munroe, Staten Island, N.Y., assignor to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Feb. 8, 1985, Ser. No. 699,804
Int. Cl.[4] H01R *11/01*
U.S. Cl. 174—87 **10 Claims**



1. A push-in electrical wire connector, comprising:

a generally cup-shaped, longitudinally-extending housing of electrically insulating material, said housing including an open end through which electrical conductors are insertable, a closed end opposite the open end, and a side wall intermediate the open and closed ends and circumferentially bounding an interior space,

said housing also including a support means within the interior space and extending from the closed end lengthwise along the housing and terminating short of the open end; and

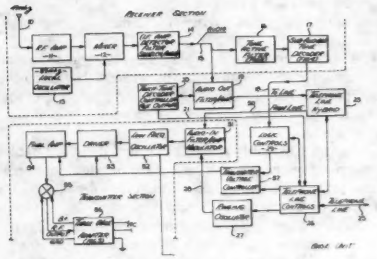
a wire-clamping member of electrically conductive material mounted within the interior space, said clamping member including a transversely-extending apertured portion mounted in supported engagement with the support means between the open and closed ends of the housing and having apertures through each of which a respective conductor is insertable,

said clamping member also including a resilient clamping portion integrally connected to the apertured portion and extending from the apertured portion lengthwise along the housing toward the closed end in an overlying relationship with the support means, said clamping portion, due to its inherent resilience, being deflectable from an initial position in response to insertion of a respective conductor between the clamping portion and the support means, to a deflected position in which the clamping portion electromechanically engages and constantly urges an insertable respective conductor against the support means.

4,585,903
CORDLESS TELEPHONE

Thomas H. Schiller, Los Altos, and Aubert E. Bennett, San Bruno, both of Calif., assignors to Viking Phone Company, Los Altos, Calif.

Continuation of Ser. No. 342,066, Jan. 25, 1982, abandoned. This application Jun. 25, 1984, Ser. No. 624,390
Int. Cl.[4] H04Q *7/04*
U.S. Cl. 179—2 EA **7 Claims**



2. In a cordless telephone system which includes a base unit, an improved remote unit, comprising:

a hand-holdable housing which encloses a receiver for receiving a signal from said base unit, a transmitter for transmitting a signal to said base unit, an oscillator for generating a predetermined frequency, said transmitter being coupled to said oscillator so that the frequency of the signal transmitted to said base unit is determined by said predetermined frequency, and a mixing means for mixing a received signal from said receiver with a signal from said oscillator to provide an intermediate frequency signal;

a speaker placed at one end of said hand-holdable housing, said speaker being coupled to said receiver;

a microphone placed at the other end of said hand-holdable housing, said microphone being coupled to said transmitter;

a first antenna mounted adjacent to a first board which includes said transmitter, said first antenna being coupled to said transmitter and being mounted adjacent to said one end of said hand-holdable housing;

a second antenna mounted adjacent to a second board which

includes said receiver, said second antenna being coupled to said receiver and being mounted adjacent to said other end of said hand-holdable housing and being perpendicular to said first antenna;

whereby the spatial separation of the receiver from the transmitter reduces interference between said receiver and said transmitter, and whereby a single oscillator is used to provide a standard for both a transmitted signal and an intermediate frequency signal.

4,585,904

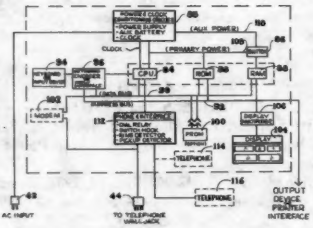
PROGRAMMABLE COMPUTERIZED TELEPHONE CALL COST METERING DEVICE

Raymond Mincone, Melville; Richard L. Miller, Dix Hills; Louis C. Vella, Selden, and Bosah Erike, Port Jefferson, all of N.Y., assignors to General Telephone Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 346,395, Feb. 5, 1982, abandoned. This application Jan. 6, 1984, Ser. No. 568,790

Int. Cl.[4] H04M *15/00*

U.S. Cl. 179—7.1 TP **25 Claims**



1. A programmable computerized telephone call cost metering device comprising:

(a) a keyboard input device for entering data, and commands;

(b) an output device for displaying data, and information;

(c) means for interfacing said programmable computerized telephone cost metering device with a telephone for automatically sensing when a called party responds to and terminates a call;

(d) means for erasably programing said programmable computerized telephone call cost metering device with a complete rate schedule of telephone costs for an entire area;

(e) means associated with said keyboard input device for selectively and changeably entering specific service type and exchange information of the telephone being interfaced to identify the particular combination of rates from the rate schedule to be used for the telephone, and

(f) means associated with said keyboard input device for selectively and changeably entering an access security code for protecting input and programmed information from being altered by anyone not entering the selected access security code, whereby the cost of a multiplicity of telephone calls with various rates made on said telephone will be displayed on said output device, when the exchange and any area code of a called number is inputted on said keyboard input device, and the total cost of a call will be displayed during the duration of a call.

4,585,905

OVERVOLTAGE PROTECTION CIRCUIT FOR SLIC

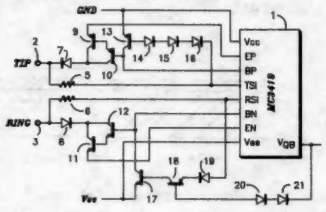
Leland T. Brown, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1983, Ser. No. 523,313

Int. Cl.[4] H02H *3/20*; **H04M** *7/00*

U.S. Cl. 179—16 AA **6 Claims**

1. An overvoltage protection circuit for a subscriber loop interface circuit (SLIC) having a Tip and a Ring terminal, the overvoltage protection circuit comprising: a current source; a first unidirectional current means coupled between the current source and the Tip terminal; a first voltage sensor coupled to the Tip terminal; first clamp means coupled to the first voltage sensor and to the current source for disabling the current source upon the first voltage sensor sensing a predetermined



voltage; a current sink coupled to the Ring terminal; a second unidirectional current means coupled between the current sink and the Ring terminal; a second voltage sensor coupled to the Ring terminal; and second clamp means coupled to the second voltage sensor and the current sink to controllably inhibit the current sink.

4,585,906

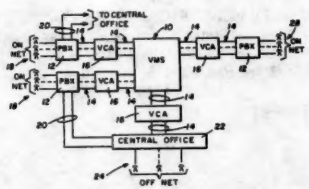
ELECTRONIC AUDIO COMMUNICATION SYSTEM WITH USER CONTROLLED MESSAGE ADDRESS

Gordon H. Matthews, Plano; Thomas B. Tansil, and Michael L. Fannin, both of Dallas, all of Tex., assignors to VMX, Inc., Richardson, Tex.

Continuation-in-part of Ser. No. 97,240, Nov. 26, 1979, Pat. No. 4,371,752. This application Sep. 29, 1982, Ser. No. 427,687

Int. Cl.[4] H04M *3/50*

U.S. Cl. 179—18 B **37 Claims**



14. An electronic communications message system for being coupled to a private branch exchange or central office for receiving, storing and forwarding analog information from a user's telephone facility, comprising;

means for transmitting analog signals from an originating user's telephone facility to a storage location;

means for storing digital representations of the analog signals received from said originating user's telephone facility;

means for enabling limited access to said stored digital representations of said originating user's analog signals by a non-originating user, the scope of said non-originating user's limited access defined by said originating user through said originating user's telephone facility, said originating user having full access to said stored digital representations of said originating user's analog signals with the limited access of said non-originating user being less than full access, said non-originating user unable to limit access to said digital representations of the originating user's analog signals;

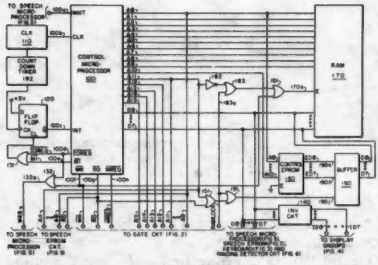
means for converting the stored digital representations into analog information; and

means for transmitting said analog information to said originating user and said non-originating user.

4,585,907
SPEECH SYNTHESIZED TELEPHONE ANSWERING CIRCUIT

David P. Giammarrusco, Bartlett, Ill., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 5, 1983, Ser. No. 558,213
Int. Cl.[4] G10L 9/14; H04M 1/64
U.S. Cl. 179—18 B 7 Claims



1. A voice synthesized telephone answering circuit for use in a communication system which includes a calling telephone station and a telephone line, said calling telephone station being operative to cause said communication system to apply a ringing signal to said telephone line, said telephone answering circuit comprising:

vocabulary storage means operative to store digital representations of a predetermined group of words;

a ringing detector, connected to said telephone line and operative in response to said ringing signal to provide a ringing detected signal;

message storage means;

a first microprocessor connected to said message storage means;

decoding means connected to said first microprocessor;

said first microprocessor being operative to provide address signals representative of a speech processor, said ringing detector, and storage locations of said vocabulary storage means;

said decoding means being operative to provide corresponding enable signals for said speech processor, ringing detector and vocabulary storage means, respectively;

said first microprocessor being connected to said ringing detector and said vocabulary storage means via said decoding means, and operative in response to said ringing detected signal to retrieve selected ones of said digital words from said vocabulary storage means, and further operative to concatenate said retrieved words into a digital telephone answering message and store it in said message storage means;

said speech processor being connected to said first microprocessor via said decoding means;

said first microprocessor being further operative to retrieve said digital telephone answering message from said message storage means and transmit it to said speech processor;

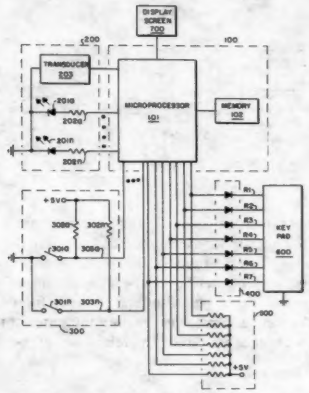
said speech processor being operative in response to said digital telephone answering message to apply a corresponding analog telephone answering message to said telephone line;

whereby said calling telephone station receives a voice synthesized telephone answering message in response to causing application of ringing current to said telephone line.

4,585,908
DATA ENTRY AND DISPLAY CONTROL CIRCUIT

Louis W. Smith, St. Petersburg, Fla., assignor to GTE Communication Systems Corporation, Northlake, Ill.

Filed Nov. 13, 1984, Ser. No. 670,510
Int. Cl.[4] H04M 1/26
U.S. Cl. 179—81 C 21 Claims



1. A data entry and display control circuit for use in a telephone including a plurality of switches each being operative to successively provide a plurality of appearances of a switch signal, and a keypad being operative to provide a plurality of character signals, said telephone being operative to provide a plurality of features, each in response to operation of a different switch, said data entry and display control circuit comprising:

storage means having a plurality of storage locations and being operative to store a plurality of feature codes, each being associated with one of said plurality of features;

a microprocessor connected between said switches and said storage means, and operative in response to the occurrence, in succession for each switch, of a first appearance of predetermined duration of said switch signal, at least one pair of character signals having a predetermined relationship to one of said feature codes, and a second appearance of predetermined duration of said switch signal, to store in said storage means a date code associating said switch with said one of said feature codes, whereby each switch is programmed to operate an associated feature; and

a display screen, connected to said microprocessor, and including a positionable cursor;

said microprocessor being further operative in response to predetermined pairs of character signals to vary the position of said cursor, and being further operative in response to other predetermined pairs of character signals to delete or insert data, as defined by a subsequent pair of characters, at the location indicated by the cursor.

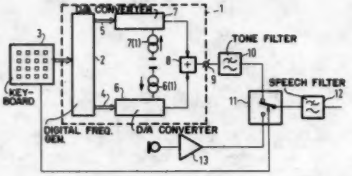
4,585,909
TRANSMISSION CIRCUIT FOR A DTMF-TELEPHONE SET

Henricus J. M. Otten; Frederik Van Dongen, and Josephus J. A. Geboers, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 28, 1984, Ser. No. 594,181
Claims priority, application Netherlands, Apr. 19, 1983, 8301366
Int. Cl.[4] H04M 1/26
U.S. Cl. 179—84 VF 6 Claims

1. A transmission circuit for a telephone set, comprising: a

tone generator for generating two groups of dialling tones, the tones of the first group all having a lower frequency than the tones of the second group; a passive first-order low-pass tone filter directly connected to said tone generator; a microphone amplifier for amplifying a speech signal; a passive first-order low-pass speech filter for limiting the frequency band of the speech signal; and a switch for selectively connecting the input



of the speech filter to the output of the tone filter or to the output of the microphone amplifier; and wherein the amplitude difference between the tones of the two tone groups caused by the frequency dependence of the attenuation of the series arrangement of the speech filter and the tone filter is compensated by the tone generator generating the tones of the second group with a higher amplitude than the tones of the first group.

4,585,910

HOOK DEVICE FOR LOCKING PANTOGRAPH

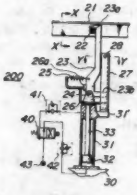
Hiroyuki Arai, Ebina, Japan, assignor to Toyo Kenki Zeizo Kabushiki Kaisha and Kabushiki Kaisha Komatsu Seisakusho, both of Tokyo, Japan

Filed Dec. 13, 1983, Ser. No. 561,037

Claims priority, application Japan, Dec. 16, 1982, 57-189211[U]

Int. Cl.⁴ B60L *5/14, 5/30*

U.S. Cl. 191—90 **6 Claims**



1. A hook device for locking a pantograph mounted on a vehicle in a lowered, inoperative position by engaging a portion of said pantograph, said device comprising:

a hook for releasably retaining said portion of said pantograph at least in said lowered position; and

an air actuated piston means connected to said hook and having a stroke, for controllably raising and lowering said hook to raised and lowered positions, respectively, said air actuated piston means further comprising shock absorber means for minimizing shocks and vibrations applied to said hook by shocks and vibrations applied to said vehicle, said shock absorber means comprising means for maintaining a clearance in the stroke of said air actuated piston when said hook is in said lowered position, wherein said hook includes means for releasing said hook from engagement with said pantograph portion when said hook is in said raised position.

4,585,911

SPRING CHARGED OPERATING DEVICE FOR SWITCH

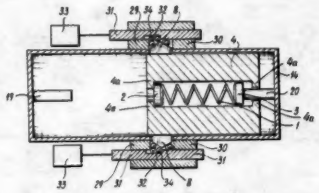
Peter V. Has, Haaksbergen; Arend J. W. Lammers, Hengelo, and Gerhardus L. Nitert, Enter, all of Netherlands, assignors to Hazemeijer B.V., Hengelo, Netherlands

Filed Feb. 15, 1984, Ser. No. 580,385

Claims priority, application Netherlands, Feb. 15, 1983, 8300560

Int. Cl.⁴ H01H *5/06, 35/00*

U.S. Cl. 200—61.53 **19 Claims**



1. A device for operating a movable actuation rod of a switch, said device comprising

a housing having opposite first and second housing ends, said first housing end being capable of mounting thereon a switch having said movable switch actuation rod extending at least partly into said housing, said housing including stop means at the second housing end,

a mass movably positioned in said housing, said mass having opposite first and second mass ends,

an actuation element at the first mass end and capable of driving said switch actuation rod,

a support means at the second mass end and capable of cooperating with said stop means,

means arresting movement of said actuation element and said support means along said mass,

an elastic energy storage means associated with said mass through said actuation element and said support means,

a locking means associated with said mass for holding said mass in a first end position nearest the first housing end at the moment the kinetic energy of said mass is zero and to hold said mass in a second end position nearest the second housing end at the moment the kinetic energy of said mass is again zero, said locking means including

at least one double wedge with two wedge portions with relating wedge surfaces, said wedge portions decreasing in cross section in opposite directions, said wedge being positioned in a space between a first surface which moves with said mass and a second surface, whereby said decreasing wedge portions each extend in one of the directions of movement of said mass;

arresting means operating with rolling friction, said arresting means being positioned in said space between the double wedge and the second surface; and

control means for alternately displacing the arresting means to one of the two partial spaces between one of the wedge portions and the second surface in order to press one of said wedge portions against the first surface by means of said arresting means, the arrangement being such that during a succeeding movement of the first surface with respect to the second surface in the direction of the wedge portion which is pressed against the first surface, the wedge will be clamped between the arresting means and the first surface, such that the wedge and the mass will be prevented from further movement,

said mass being movable within said housing between said first mass end position nearest the first housing end and said second mass end position nearest the second housing end, thus transforming potential energy into kinetic energy and vice versa; and when a switch with said movable switch actuation rod is mounted at the first housing end,

such that its actuation rod extends into said housing, said device will operate as follows:

(1) just before said mass is locked in said first mass end position by said locking means and after said switch actuation rod has pushed said actuation element to an end position nearest the second mass end, thereby concurrently moving said switch actuation rod inwardly of said switch to an end position defined by the closed state of said switch, said mass will convert its remaining kinetic energy into potential energy while further moving into said first housing end position, thereby compressing said energy storage means and increasing its stored potential energy,

(2) when said locking means releases said mass, said energy storage means will expand, causing said mass to move toward the second housing end, its storage potential energy being converted to kinetic energy, said switch actuation rod at the same time being allowed to move outwardly of said switch, and

(3) just before said mass is locked in said second mass end position by said locking means and after said stop means has pushed said support means towards said actuation element and caused said support means to take up an end position farthest from the second mass end, said mass will convert its remaining kinetic energy into potential energy while further moving to its second mass end position, thereby compressing said energy storage means and increasing its stored potential energy.

4,585,912

CIRCUIT BREAKER, PARTICULARLY LINE-PROTECTIVE CIRCUIT BREAKER

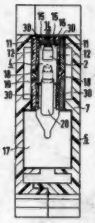
Elmar Fischer, Regensburg; Reinhard Sangl, Wenzenbach, and Paul Herma, Burglengenfeld, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 15, 1984, Ser. No. 590,071

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3311052

Int. Cl.⁴ H01H *33/02, 9/30*

U.S. Cl. 200—144 R **6 Claims**



1. In a circuit breaker including a housing; an arc chamber arranged within said housing; a fixed contact and a movable contact arranged in said arc chamber; a power supply line forming a U-shaped current loop with said contacts; an arc-extinguishing chamber arranged in said housing and including extinguishing plates; means for guiding the path of the arc from said arc chamber into said extinguishing chamber; said arc guide means extending from said contacts to said extinguishing chamber defining an upper wall and one narrow intermediate side wall of said arc chamber; opposed plates of a magnetically-conductive material defining opposed side walls of said arc chamber, said opposed plates extending in parallel with the plane of contact movement and extending from said contacts to said extinguishing chamber; and a gas-emitting coating being provided on each of said plates of an electrically insulating material which emits gas when heated, the improvement comprising: sealing means extending along said upper wall and said one narrow intermediate side wall of the arc chamber, said sealing means extending from said contacts to said extinguishing chamber in sealing arrangement adjacent said arc guide means, and air gaps being provided on the opposite narrow side wall of the arc chamber; and said opposed plates of magnetically-conductive material being arranged in a sealed relationship adjacent respective walls of said housing.

4,585,913

BELLOWS DEVICE

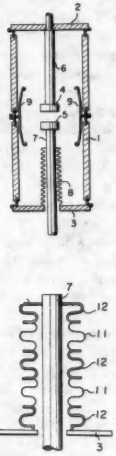
Mitsumasa Yorita, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1984, Ser. No. 640,324

Claims priority, application Japan, Sep. 17, 1983, 58-171585

Int. Cl.⁴ H01H *33/66;* **F16L** *11/00, 21/00*

U.S. Cl. 200—144 B **6 Claims**



1. A bellows device, comprising:

a plurality of bellows members having recesses and ridges formed therein in an axial direction of the expansion and contraction wherein the thickness of a bellows member in a middle axial portion of said device is larger than that of neighboring bellows members and wherein said neighboring bellows members are of uniform thickness.

4,585,914

MINIATURE PUSH-BUTTON SWITCH

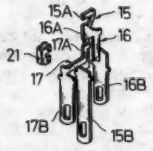
Shigeo Ohashi, and Yasushi Fujita, both of Tokyo, Japan, assignors to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Japan

Filed Aug. 13, 1984, Ser. No. 639,992

Claims priority, application Japan, Sep. 29, 1983, 58-149688[U]

Int. Cl.⁴ H01H *1/42*

U.S. Cl. 200—284 **8 Claims**



1. A miniature push-button switch comprising:

a housing;

first, second and third contact members comprising a normally open, NO, contact member, a normally closed, NC, contact member and a common, C, contact member, respectively, which are arranged in fixed positions within the housing substantially along a line extending in a longitudinal direction of the housing;

first, second and third terminal members comprising a NO terminal member, a NC terminal member and a C terminal member respectively, which are connected to the respective contact members and are arranged within the housing substantially along a line perpendicular to the longitudinal direction, said second terminal member being positioned between said first and said third terminal members;

a movable contact member which is movable within the housing in a longitudinal direction in contact with the contact members such that the movable contact member couples said third contact member and said second contact member in a first position, and said movable contact member couples said third contact member and said first contact member in a second position;

a switching element for moving said movable contact member, said switching element being movable within said housing in the longitudinal direction; and

a push button for moving said switching element, said push button being arranged in one end portion of said housing and being movable in the said longitudinal direction,

wherein said switching element is moved from said first position to said second position by pushing said push button,

said contact members and said respective terminal members are integrally formed by an electrically conductive plate material such that surfaces of said contact members are substantially perpendicular to surfaces of said terminal members, and

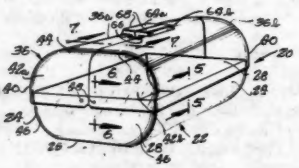
said terminal members composed of the electrically conductive plate material are arranged substantially in parallel with one another.

4,585,915

CONTAINERS WITH ATTACHED LID FOR STORAGE AND MICROWAVE COOKING

Michael A. Moore, Alhambra, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 29, 1985, Ser. No. 728,414
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E **9 Claims**



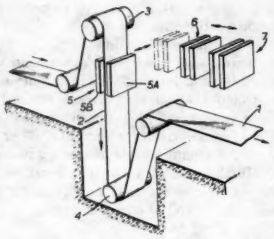
1. A container for freeze storing and subsequent microwave heating and serving of food products made of material transparent to electromagnetic radiation and comprising a base of substantially semi-cylindrical configuration of predetermined radius having closed ends and having a chordally flat bottom on which said container may rest, said base being upwardly open and having an upper edge with an outwardly projecting rim, and two cover portions each of substantially cylindrical configuration of greater radius than said predetermined radius with closed ends, said cover portions being respectively pivoted to said base and having lower edges with inwardly directed flange means interfitting with said rim to seal said cover portions to said base, said cover portions having mutually confronting edges with cooperating means for sealing said cover portions to one another, said cover portions being pivotable from a position overlying and closing said base to a position underlying said base.

4,585,916

TRANSVERSE FLUX INDUCTION HEATING OF METAL STRIP

Keith E. Rich, Bournemouth, England, assignor to Davy McKee (Poole) Limited, Dorset, England

Filed May 27, 1983, Ser. No. 498,937
Claims priority, application United Kingdom, Jun. 2, 1982, 8216096; May 5, 1983, 8312361
Int. Cl.[4] H05B *6/44*
U.S. Cl. 219—10.61 R **16 Claims**



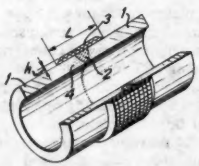
1. An induction heating system comprising a structure having at least two support assemblies each of which is capable of supporting a transverse flux induction heater having a pair of heater elements; a transverse flux induction heater having a pair of heater elements of a first width supported by one of the assemblies; a transverse flux induction heater having a pair of heater elements of a different width supported by the other assembly; means for displacing the support assemblies so that the assemblies can be brought in turn to a changeover position close to a path taken by metal strip to be heated moving in the direction of its length; means for displacing the transverse flow induction heater supported by the assembly at the changeover position to an operating position in which the heater elements are located on opposite sides of the path and guide means for supporting the transverse flux induction heater in the operating position and as it is displaced between the operating position and the changeover position.

4,585,917

METHOD FOR RELIEVING RESIDUAL STRESSES BY BUILD-UP WELDING OVER OUTER SURFACE OF PIPE

Kazuo Yoshida, and Tadahiro Umemoto, both of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1984, Ser. No. 581,317
Claims priority, application Japan, Feb. 28, 1983, 58-32542
Int. Cl.[4] B23K *9/04*
U.S. Cl. 219—76.1 **1 Claim**



1. A method of relieving residual stresses at a joint of a pipe having an outer surface, comprising: build-up welding a portion at the joint on the outer surface of the pipe, with a ratio h/t

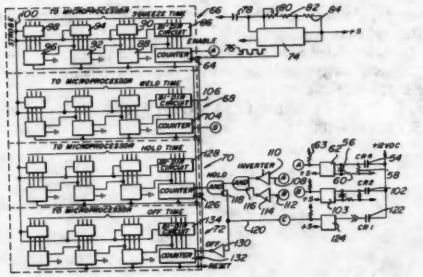
higher than approximately 0.2, and a ratio $L/\sqrt{Rt}$ higher than approximately 1, wherein h denotes height of the buildup weld portion; t the wall thickness of the pipe; L the width of the build-up welded portion; and R the radius of the pipe.

4,585,918

SYSTEM FOR MEASURING AND STORING DATA RELATING TO THE TIME DURATIONS OF STEPS IN A WELDING OPERATION AS WELL AS WELD CURRENT AND GUN PRESSURE

James I. Corrigan, Laurel Springs, N.J., and Casper P. Lunova, Churchville, Pa., assignors to The Budd Company, Troy, Mich.

Filed Feb. 25, 1983, Ser. No. 470,026
Int. Cl.⁴ B23K *11/24*
U.S. Cl. 219—110 **1 Claim**



1. In combination with a welding gun disposed to engage a workpiece and apply welding direct current thereto in a resistance welding system, means for measuring the time durations of a plurality of sequential steps including the time of squeezing said welding gun on said workpiece, welding current time, hold time and idle time in a welding operation comprising:

(a) first bi-stable circuit means responsive to the starts of said plurality of steps to generate enable electrical signals and for maintaining said enable signals for the duration of the steps being measured;

(b) second circuit means responsive to the end of said plurality of steps to terminate said enable electrical signals generated by said first bi-stable circuit means;

(c) a timing circuit for generating pulse signals;

(d) a plurality of counter circuits responsive to said pulse signals when said enable signals are applied thereto to measure the time durations of said electrical signals;

(e) a plurality of bi-directional circuits selectively passing data signals stored in said counter circuits representative of said time duration;

(f) display means;

(g) said display means comprising means having printed out data relating to the data stored in said counters;

(h) means for allowing said bi-directional circuits to pass said data signals to said display means;

(i) means to discontinue said welding operation when any one of said time durations deviate from predetermined time standards;

(j) said first bi-stable circuit means comprising a plurality of relays for operating a plurality of pairs of contacts;

(k) said relay circuits and contacts associated with said hold time are utilized with the relays and contacts of said squeeze and weld current time measurements and included in control circuitry for generating the enable signal relating to said hold time, and

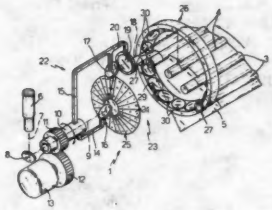
(l) said control circuitry for generating said hold signal being combined with an inverter circuit to generate the enable signal relating to said off time measurement.

4,585,919

PIERCING DEVICE FOR PIERCING VENTILATING HOLES IN CIGARETTES OR SIMILAR SMOKING COMMODITIES

Riccardo Mattei; Armando Neri, both of Bologna; Santo R. Gobbi, Pavia, and Maichi Cantello, Aglie', all of Italy, assignors to G.D. Societa per Azioni, Bologna, Italy

Filed Sep. 10, 1984, Ser. No. 649,323
Claims priority, application Italy, Sep. 12, 1983, 3558 A/83
Int. Cl.⁴ B23K *26/00*
U.S. Cl. 219—121 LK **5 Claims**



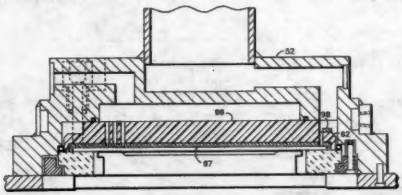
1. Piercing device (1) for piercing ventilating holes in cigarettes (3) or similar smoking commodities supported on a feeding drum (5) assembled in rotary manner round an axis, the piercing device comprising a laser source (6) and an optical reflecting and focusing system designed to divert the beam (7) emitted by the said source (6) and focus it, in succession, on specific points on the surface of each said cigarette (3), while the latter is travelling crosswise in relation to its own axis round the axis of rotation of the said drum (5); the said laser source (6) being designed to emit a continuous beam (7) along a fixed axis (9) parallel with the axes of the said cigarettes (3) and arranged along, the path followed by said cigarettes, said optical system comprises a mobile reflecting and focusing unit (22), assemlbed in rotary manner round the said fixed axis (9), and a fixed reflecting member (23) comprising two rings (25, 26) of reflecting elements (24, 30) arranged round the said fixed axis (9); the elements (24) on one said ring (25) being optically inserted between two reflecting elements (16, 17) on the said mobile unit (22) and forming, with the perpendicular of the said fixed axis (9), angles varying from one element to another according to the formula $a=(2\pi R+P\cos c)/4\pi l$.

4,585,920

PLASMA REACTOR REMOVABLE INSERT

Josef T. Hoog, Novato, and James W. Mitzel, Richmond, both of Calif., assignors to Tegal Corporation, Novato, Calif.

Continuation of Ser. No. 380,591, May 21, 1982, abandoned.
This application Oct. 9, 1984, Ser. No. 658,468
Int. Cl.⁴ B23K *9/00*
U.S. Cl. 219—121 PR **21 Claims**



1. Planar RF plasma reactor apparatus comprising:
a frame member having an aperture therein;
a shell secured to said frame about said aperture;
an upper electrode which fits within said shell, at least a

portion of said electrode being electrically coupled to said shell;

retaining means attached to said shell for holding said electrode in place; and

wherein said aperture is larger than said electrode in at least one dimension for enbaling removal of said electrode through said aperture without separating said shell and said frame.

4,585,921

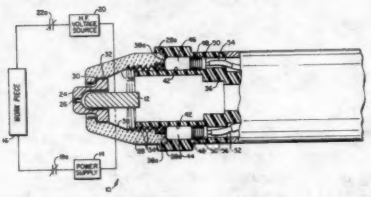
TORCH OPERATION INTERLOCK DEVICE

Raymond G. Wilkins, Hanover, and Bruce O. Hatch, Lebanon, both of N.H., assignors to Thermal Dynamics Corporation, West Lebanon, N.H.

Filed Jul. 20, 1983, Ser. No. 515,950

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—121 PT **14 Claims**



1. An operation interlock device for minimizing electrical shock hazard in using a plasma torch, said torch including a cathode, the cathode enclosed by a cup and an electrically conductive torch tip adjacent to the cathode and a power supply for starting and maintaining a transferred arc between the cathode and a workpiece without employing a pilot arc, wherein the transferred arc is started by causing the torch tip to touch the workpiece, said interlock device comprising:

means for comparing the resistance between the torch tip and workpiece to a predetermined value, said comparing means adapted to generate a control signal indicative of whether such resistance is below the predetermined value and of whether the torch tip is touching the workpiece; and

relay means responsive to said control signal for switching on said power supply when the resistance between the torch tip and workpiece is below the predetermined value to start and maintain a transferred arc between the cathode and the workpiece.

4,585,922

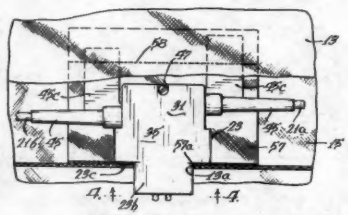
BLANKET WIRE CORD CONNECTOR MODULE

Allen V. Berenson, Chicago, Ill., assignor to Sunbeam Corporation, Oak Brook, Ill.

Filed Dec. 5, 1984, Ser. No. 678,310

Int. Cl.⁴ H05B *1/00*

U.S. Cl. 219—212 **18 Claims**



1. An electric blanket comprising a pair of coextensive layers of fabric having strips along which said layers are secured to form a continuous channel in which an elongated heating cable is disposed, said cable having two ends which are connected in a terminal block to a two conductor power cord, said terminal block including a pair of housing members which form an enclosure in which said cable ends are connected to said power cord, a pair of flexible strain relief members each having an enlarged body portion, a sleeve portion and a flat assembly tab portion, said body portions being captured in opposed recesses in said housing members with said sleeve and tab portions extending outside of said enclosure, said terminal block being positioned in a slot in one of said layers with said sleeve and assembly portions being between said layers and said power cord being outside of said blanket layers, said tab portions being sewn to said blanket layers.

4,585,923

HEATING CABINET

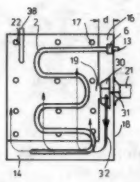
Peter M. Binder, Schaffhauser Str. 19, 7200 Tuttlingen, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 532,997

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235130

Int. Cl.⁴ F24C *7/06*

U.S. Cl. 219—400 **10 Claims**



1. A heating cabinet comprising:

(a) an inner chamber having inner side walls, a bottom wall, a rear wall, and a top wall,

(b) outer side and bottom walls spaced apart from said side and bottom inner chamber walls and defining a U-shaped antechamber therebetween,

(c) an outer rear wall spaced apart from said rear inner wall and defining a rear air passage chamber therebetween, said rear chamber communicating with the antechamber only between the inner and outer bottom walls, and

(d) a one-piece, U-shaped heater of meander-like shape contained within the U-shaped antechamber in spaced apart relation to said inner and outer walls.

4,585,924

SELF-CONTAINED ELECTRIC DIESEL ENGINE FUEL FILTER ASSEMBLY HEATER

Benjamin J. Pakula, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

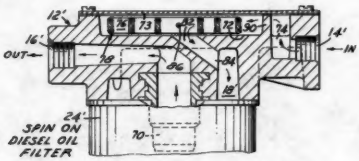
Continuation-in-part of Ser. No. 529,352, filed as PCT US83/01220, Aug. 8, 1983, § 102(e) date Aug. 8, 1983, abandoned, which is a continuation-in-part of Ser. No. 456,072, Nov. 22, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,331

Int. Cl.⁴ F02M *31/12;* F24H *1/10;* B01D *35/18;* H05B *3/80*

U.S. Cl. 219—205 **1 Claim**

1. A self-contained fuel oil heater unit for use with a diesel engine, the unit including a fuel oil manifold and a spin-on cartridge type fuel oil filter attached thereto, said filter including an end having a central fuel oil outlet and peripheral fuel oil inlets, the fuel oil manifold having a first portion formed with horizontally disposed fuel oil inlet and outlet passages, a second manifold portion projecting upwardly from the first portion as an extension thereof, the second portion of the manifold being formed with an upwardly open bowl shaped recess in the

top surface thereby constituting a fuel oil reservoir integral with the manifold, a removable cover closing said recess, an electrically operative heater element positioned in said recess, and adapted to be immersed in the fuel oil in the reservoir for warming the fuel oil, the fuel inlet and outlet passages each communicating respectively with other passages in said manifold connected to an inlet to the reservoir and to the outlet of



the fuel filter, a further fuel outlet in said manifold for conducting the warmed fuel oil from the reservoir through the manifold first portion to the peripheral fuel oil inlets on the end of the fuel oil filter for flow through the peripheral edges thereof into the filter proper and out through the filter outlet to the fuel oil outlet passage, and means connecting the heating element to the electrical system of a diesel engine to be operative upon the engine being rendered operative.

4,585,925

SYSTEM TO CONTROL AND REGULATE HEAT APPLIED DURING THE HEATING PHASE OF A STEAM PRESSURE COOKING VESSEL

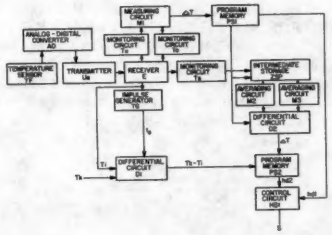
Wolfram K. Andre, Aichwald, Fed. Rep. of Germany, assignor to Kurt Wolf & Co. KG, Fed. Rep. of Germany

Filed Nov. 19, 1984, Ser. No. 673,197

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1983, 3342416

Int. Cl.[4] H05B 1/02

U.S. Cl. 219—497 **15 Claims**



1. An apparatus to control heat output of a heating element heating a pressure cooker with liquid contents during a heat-up phase until a preset cooking temperature is reached, said heating element controlled by a first program means until a boiling temperature of said liquid is reached and by a second program means after said boiling temperature is reached and until said preset cooking temperature is reached, said apparatus comprising:

temperature sensor means (TF) measuring the temperature at said pressure cooker and transmission means (Ue) capable of transmitting a signal corresponding to the measured temperature;

first measuring means (Tu, To, M1) receiving said signal corresponding to said measured temperature and capable of measuring a time span (Δt) which elapses between reaching a first and second specified temperature (Tu, To), determining whether said elapsed time span (Δt) is greater than a specified time span (Δtv), and measuring a temperature difference (Δt) during specified time intervals (t_o) when said elapsed time span (Δt) is less than said specified time span (Δtv);

first program means (PS1) capable of analyzing said temperature difference (Δt) for each said specified time interval (t_o) until said boiling temperature (Ts) is reached and transmitting a signal (hdl) to a control circuit (HSt) to control said heating element during each subsequent specified time interval (t_o) until said boiling temperature (Ts) is reached;

second measuring means (Ts, ZSP, M2, M3, D2, D1) receiving said signal corresponding to said measured temperature and capable of measuring a temperature difference (Δt) during said specified time intervals (t_o) after said boiling temperature (Ts) is reached and determining a temperature differential ($T_k - T_i$) between said preset cooking temperature (T_k) and an actual sensed temperature (T_i) during each said specified time interval (t_o) after said boiling temperature (Ts) is reached;

second program means (PS2) capable of analyzing said temperature difference (Δt) and said temperature differential ($T_k - T_i$) for each specified time interval (t_o) after said boiling temperature (Ts) is reached and until said preset cooking temperature (T_k) is reached and transmitting a signal (hd2) to said control circuit means (HSt) to control said heating element during each subsequent specified time interval (t_o) until said preset cooking temperature (T_k) is reached; and

control circuit means (HSt) maintaining said heating element on continuously until said boiling temperature (Ts) is reched when said elapsed time span (Δt) is greater than said specified time span (Δtv) and controlling said heating element when said elapsed time span (Δt) is less than said specified time span (Δtv) according to said signal (hd1) until said boiling temperature (Ts) is reached and according to said signal (hd2) after said boiling temperature (Ts) is reached and until said preset cooking temperature (T_k) is reached.

4,585,926

TEMPERATURE CONTROL AND INDICATING ARRANGEMENT

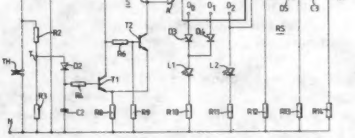
Stephen P. Easthill, Chessington, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1985, Ser. No. 690,925

Claims priority, application United Kingdom, Jan. 20, 1984, 8401506

Int. Cl.[4] H05B 1/02

U.S. Cl. 219—506 **12 Claims**



1. A temperature control and indicating arrangement, which comprises an electric heating element; a thermostat connected in series with said heating element and responsive to the heat generated thereby; means responsive to the operation of the thermostat for indicating when the temperature in the region of the thermostat reaches a value determined by the thermostat; a resettable electronic counter; circuit means for resetting the counter each time a power supply is connected to the arrangement; means for detecting cyclically repetitive switching operations of the thermostat and for causing the counter to count said operations immediately following each resetting of

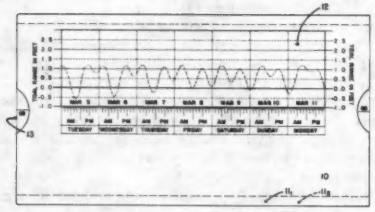
the counter; and counter-stop circuit means for stopping the counter at a given count position corresponding to a count value greater than unity; the indicating means including a visual indicator electrically coupled to the counter to provide a visible indication when the counter is in said given count position.

4,585,927

APPARATUS FOR PREDICTING THE EXACT TIME OF CURRENTS IN TERMS OF THE YEAR, MONTH, DAY AND HOUR

Harold L. Thompson, 10478 Goodwood Blvd., Baton Rouge, La. 70815

Filed Feb. 21, 1985, Ser. No. 703,912
Int. Cl.[4] G06G *1/02*
U.S. Cl. 235—70 R **6 Claims**



1. Apparatus useful for predicting for bodies of water upon the earth's surface the time of flow of currents, the direction of current flows, the strength and duration of the flow of currents, at a given geographic location, which comprises

a stator scribed with indicia to form a scale representing a time period in days, and another scale representing hourly heights of the surface level of the water relative to a normal level,

a slide scribed with a sinuous wave form of irregular shape representative of the tidal range over the period represented on said stator which can be fitted to and compared with the scale of values on said stator to determine the time of flow of currents, the direction, strength and duration of flow of currents.

4,585,928

AUTOMATIC DEPOSITING/DISPENSING APPARATUS

Yoshihiro Watanabe, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 8, 1983, Ser. No. 502,118
Claims priority, application Japan, Jun. 16, 1982, 57-103327
Int. Cl.[4] G06F *15/30*
U.S. Cl. 235—379 **4 Claims**

1. An automatic depositing/dispensing apparatus which stores deposited notes together with previously stored notes and appropriates the deposited notes for dispensation, comprising:

a housing having a note inlet and a note outlet;

a plurality of note storage means in the housing each for storing deposited notes of a predetermined denomination and including first note storage means for storing notes of a denomination available for dispensation and second note storage means for storing notes of a denomination unavailable for dispensation;

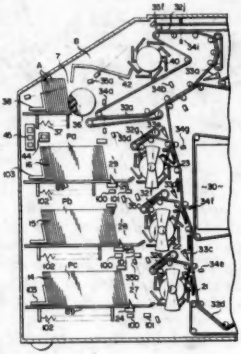
first conveyor means for transferring notes inserted in the note inlet to a respective one of said first and second note storage means;

judgment means for determining whether a denomination of a deposited note renders the note either available for dispensation or unavailable for dispensation;

diverging means connected to said judgment means and positioned so as to correspond to said first and second note storage means for leading the notes transferred thereto by said first conveyor means to a respective one of said first and second note storage means in response to said judgment means determining whether the deposited noted are available for dispensation or unavailable for dispensation, respectively;

second conveyor means for transferring, to the note outlet, notes taken out of said first note storage means; and

mode selection means attached to the housing and operatively connected to said diverging means, said mode selection means being selectively switchable between (a) a first mode for causing the diverging means to lead the deposited notes to said respective one of said first and second note storage means in response to said judgment means determining whether the deposited notes are available or unavailable for dispensation, respectively, and (b) a second mode for causing said diverging means to lead the deposited notes only to said second note storage means.

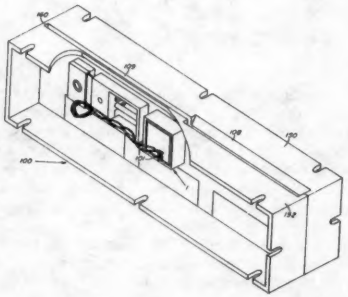


4,585,929

MAGNETIC STRIPE MEDIA READER MODULES AND CARIERS FOR MAGNETIC HEAD READER/ENCODERS FOR SUCH MEDIA

Edmund J. Brown, Topanga, and Kenneth L. Miller, Torrance, both of Calif., assignors to Xico, Inc., Santa Monica, Calif.

Filed Jun. 16, 1983, Ser. No. 504,808
Int. Cl.[4] G06K *7/08*
U.S. Cl. 235—449 **23 Claims**



1. Means for carrying a magnetic head comprising movable means for holding a magnetic head, disposed for contact with the magnetic stripe on a magnetic stripe-bearing medium; means for mounting said carrying means on a modular body; and gimbaling means linked to said mounting means at one end,

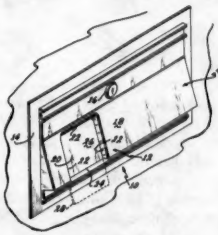
and to said holding means at the other end, said gimbaling means including a frame with a shaft held centrally, and mounted rotatably in said frame, said shaft being rotatably mounted in notch means, one at each end of said gimbaling frame, with groove means near one end of said shaft rotatably mounted in the notch means nearest the mounting means, said shaft having substantially no axial freedom of movement, said shaft being anchored at one end in said head-holding means, and wherein, during formation of said gimbaling frame, one side of said gimbaling frame, except for notch means on said one side, closes around said shaft at a location on said shaft near said holding means, and a second opposing side of said gimbaling frame, except for notch means on said second side, closes around said shaft and flows into said groove forming bearing means for rotation of said shaft in said gimbaling frame.

4,585,930

SLOTLESS MAGNETIC CARD READER

Martin Casden, Calabasas, Calif., assignor to Soundcraft, Inc., Northridge, Calif.

Filed Dec. 30, 1983, Ser. No. 567,431
Int. Cl.[4] G06K *7/08*
U.S. Cl. 235—449 **24 Claims**



1. A slotless card reader for reading a magnetically encoded card, said card reader comprising:

a slotless front panel having an inner side and a public side;

magnetic card reader means disposed on said inner side of said panel;

at least a portion of said front panel being of a magnetically permeable material defining a card touch area on said public side over said card reader means, said card touch area being exposed on said public side for manually applying magnetic card downwardly thereagainst and for lifting such a card therefrom; and

positioning means on said public side for aligning a magnetic card manually held flat against said card touch area with said card reader means.

4,585,931

METHOD FOR AUTOMATICALLY IDENTIFYING SEMICONDUCTOR WAFERS

Hibbert A. Duncan, East Windsor, N.J.; Francis J. Ehret, North Whitehall Township, Lehigh County, Pa.; Sherwin R. Kahn, South Brunswick Township, Middlesex County, N.J.; Karen H. Kinney, Lawrence Township, Mercer County, N.J., and Peter D. Parry, Montgomery Township, Somerset County, N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

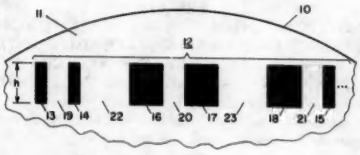
Filed Nov. 21, 1983, Ser. No. 553,655
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—464 **19 Claims**

1. A method for automatically identifying a semiconductor wafer comprising the steps of:

providing coded indicia including bars and spaces of a selected length in a predetermined portion of a surface of a semiconductor wafer;

imparting a relative rotational motion between the semiconductor wafer and a radiant energy sensing means through at least a predetermined arc about an axis perpendicular to the surface of the wafer while imparting a relative linear motion therebetween in a radial direction along the surface of the wafer;

directing a beam of radiant energy at said predetermined portion of the surface of the wafer along a first predetermined angular direction relative thereto so that the beam of radiant energy is reflected from the space portions of the coded indicia into the radiant energy sensing means



along a second angular direction relative to the surface of the wafer;

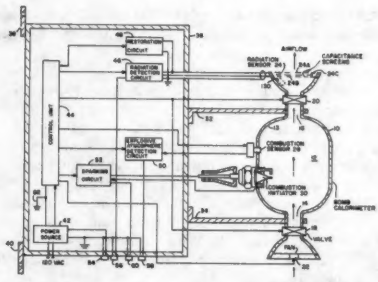
sensing, at the radiant energy sensing means, the radiant energy reflected by the space portions of the coded indicia at successively different positions along the length thereof as the relative linear motion is imparted between the wafer and the radiant energy sensing means while the relative rotational motion is imparted therebetween, to generate signals identifying the wafer.

4,585,932

MONITOR SYSTEM FOR POTENTIALLY HAZARDOUS RADIATION AND COMBUSTION CONDITIONS

Thomas G. Roberts, 2815 Bentley St., Huntsville, Ala. 35801, and Thomas E. Honeycutt, Rte. 1, Box 405, Shag Bark Trail, Somerville, both of Ala. 35670

Filed Aug. 6, 1984, Ser. No. 638,143
Int. Cl.[4] H01J *47/02*
U.S. Cl. 250—380 **9 Claims**



1. A hazardous condition monitoring system comprising: a vessel having a chamber, an input port, and an output port therein for passing atmosphere along a flow path through the chamber, a radiation sensor mounted in one of said ports and disposed in the flow path through said vessel for sensing changes in atmospheric conditions in the chamber, and for providing electrical output signals therefrom; said radiation sensor having a common electrical input-output path, and being responsive to impinging energetic nuclear particles of radiation in the atmosphere passed through said vessel to provide a changed electrical output potential therefrom; annunciation means; detection means coupled to said radiation sensor for detecting a predetermined change in said electrical output potential, said detection means being coupled to provide an output to said annunciation means, said annunciation means

being coupled to receive said detection means output and providing annunciation indicative of presence of excessive nuclear radiation passing through said vessel when a predetermined threshold is exceeded, said threshold being indicative of the occurance of a hazardous condition; first and second valves disposed respectively in said input and output ports for opening and closing both ports to periodically seal said chamber from external atmospheric conditions, and control means for simultaneously operating said valves.

4,585,933

OPTICAL APPARATUS AND METHOD FOR DETECTING THE FOCUSING STATE AND POSITIONAL ACCURACY OF A LIGHT BEAM DIRECTED ONTO AN OPTICAL DISK TRACKING GUIDE IN AN OPTICAL READ/WRITE SYSTEM

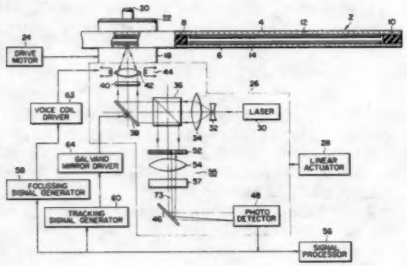
Hideo Ando, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 10, 1982, Ser. No. 416,694

Claims priority, application Japan, Sep. 17, 1981, 56-146540; Sep. 17, 1981, 56-146542; Sep. 17, 1981, 56-146543; Oct. 22, 1981, 56-168966; Oct. 22, 1981, 56-168969

Int. Cl.[4] G11B *7/00*

U.S. Cl. 250—201 **37 Claims**



1. An optical system for controlling a light beam which is directed onto a light reflecting surface having a tracking guide, comprising:

means for generating a light beam;

objective lens means for converging said light beam into a converged light beam having a beam waist, and for directing said converged light beam onto said light reflecting surface to produce a beam spot on said tracking guide, said objective lens means being in focus when said beam spot is equal in size to said beam waist and being out of focus when said beam spot is larger than said beam waist, and for directing light reflected from said light reflecting surface, said directed light having a beam spot image and diffraction patterns which result from light reflected from said tracking guide;

means for transferring and deflecting said directed light;

astigmation lens means for reconverging said directed light received from said transferring and deflecting means; and

photodetecting means for receiving the reconverged light and detecting the focus and tracking state of said converged light beam on said tracking guide, said photodetecting means being positioned substantially on a plane where the beam spot image in said reconverged light is in focus, said photodetecting means including an arrangement having first, second, third, and fourth photosensitive regions disposed to cause: (1) the beam spot image in said reconverged light to fall substantially onto the center of said arrangement when said converged light beam is in focus on said tracking guide, (2) said reconverged light beam spot to fall predominantly into at least one of said photosensitive regions when said converged light beam is out of focus, (3) the diffraction patterns in said reconverged light to fall on said photodetecting means substantially in the center of said reconverged light beam spot when said converged light beam is properly tracking said tracking guide, and (4) said reconverged light diffraction patterns to fall off center in said reconverged light beam spot when said converged light beam is not properly tracking said tracking guide.

4,585,934

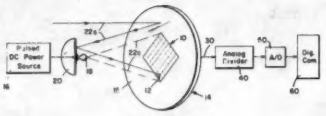
SELF-CALIBRATION TECHNIQUE FOR CHARGE-COUPLED DEVICE IMAGERS

Donald E. French, Westlake Village, and John A. Sekula, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 17,876, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 760,318, Jan. 18, 1977, abandoned. This application May 13, 1980, Ser. No. 149,381

Int. Cl.[4] H01J *40/14;* H01L *29/78, 27/14, 31/00*

U.S. Cl. 250—211 J **3 Claims**



1. A self calibration imager comprising:

a plurality of detectors during a first time period formed in a semiconductor two-dimensional matrix;

means for applying signal illumination to said detectors;

means for selectively providing calibration illumination to said detectors during a second time period;

a charge coupled device (CCD) shift register formed in said semiconductor two-dimensional matrix and being operatively coupled to said detectors so as to cause charges produced by the signal illumination during a first time period to be stored at first respective stages of the shift register such that a particular stage is associated with a particular detector and so that at the end of the first time period said stored charges are transferred to a respective second stage of the shift register such that a particular second stage is associated with a particular detector, so that charges produced during said second time period are stored in said respective first stages and so that during a third time period the signals stored in said shift register are read out; and

normalization means for normalizing each read out signal from a second stage as a function of the signal from the associated first stage.

4,585,935

ELECTRON DISCHARGE DEVICE HAVING A SUBSTANTIALLY SPHERICAL ELECTROSTATIC FIELD LENS

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 10, 1984, Ser. No. 579,188

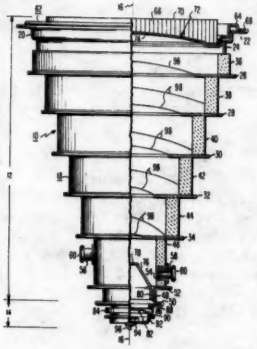
Int. Cl.[4] H01J *31/50*

U.S. Cl. 250—213 VT **5 Claims**

1. In an electron discharge device of the type including an evacuated envelope having a longitudinal axis, said envelope enclosing a photoemissive cathode for providing electrons in response to radiation incident theren, output means spaced from said photoemissive cathode and electrostatic focusing means for focusing the electrons from said photoemissive cathode onto said output means, the improvement comprising

said focusing means including a plurality of discrete, washer-like electrodes disposed between said photoemissive cathode and said output means, each of said electrodes having an electron aperture of progressively decreasing diameter

wherein the electron aperture in the electrode adjacent to the photoemissive cathode being larger than the electron aperture in the electrode adjacent to the output means,



said electrodes providing a substantially spherical electrostatic field lens between said photoemissive cathode and said output means.

4,585,936

OPTICAL PROCESS FOR DETERMINING THE DIMENSIONS OF AN OBJECT IN RELATIVE MOVEMENT, AND MORE PARTICULARLY OF A COIN IN A PRE-PAYMENT APPARATUS

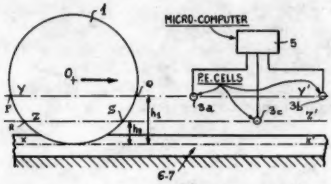
Christian Sellier, Tournon-sur-Rhone, France, assignor to Mecelec, Tournon-sur-Rhone, France

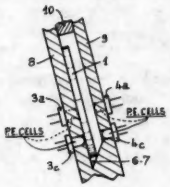
Filed Jan. 25, 1984, Ser. No. 573,736

Claims priority, application France, Feb. 10, 1983, 83 02442

Int. Cl.[4] G07F *3/02*; H01J *40/14*

U.S. Cl. 250—223 R **4 Claims**





1. A process for determining or verifying the dimensional thickness and diameter characteristics of a flat object, and more particularly of a coin, which is rolled on an inclined track so that it passes in front of plural normally illuminated photoelectric cell means whose illumination it interrupts upon passage thereby, said cell means including a main cell and auxiliary cell means located at predetermined different levels above the track, including the steps of:

rolling the object along said track which is provided in the vicinity of the cell means with a section in the form of a notch, with a first side parallel to the plane of the object and a second side whose general profile makes a determined angle with the first side, obtaining outputs from the cell means representing the times of interruption of the illumination thereto by the object, and computer calculating from said outputs, taking into account the speed of the object, signals representative of the diameter and thickness of the object for a determined depth of penetration of this object is the notch, whereby the signals thus derived from said outputs make it possible either to calculate the diameter and thickness of the object, or, by comparison with recorded data, to verify whether it comes into a predetermined recorded category.

4,585,937

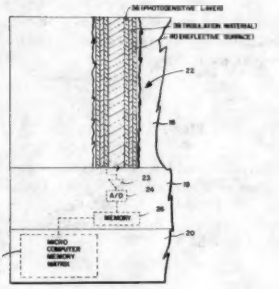
HIGH EFFICIENCY FIBER-SHAPED DETECTOR

Richard T. Schneider, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 475,676, Mar. 15, 1983. This application Nov. 28, 1983, Ser. No. 555,803

Int. Cl.[4] G02B *6/02*; H01J *5/16*

U.S. Cl. 250—227 **10 Claims**



4. A high efficiency fiber-shaped detector comprising:

a longitudinal extending core having a first end for receiving an incoming beam of electromagnetic radiation and a second end disposed a preselected distance from said first end, said core being made of a material transparent to the wavelength of said incoming beam of electromagnetic radiation;

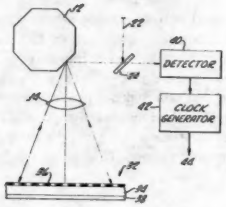
photosensitive means in be form of a plurality of photosensitive segments circumscribing said core, each of said photosensitve segments being spaced apart from one another in the longitudinal direction and capable of receiving said incoming beam of electromagnetic radiation and converting said received electromagnetic radiation into an electrical signal; and

means connected between each of said photosensitive segments and a processing means for transmitting said electrical signal to said processing means whereby said detector provides information relating to the angle at which said beam of electromagnetic radiation enters said detector.

4,585,938
SURFACE DEVIATION COMPENSATION FOR A BEAM SCANNING SYSTEM

Don B. Neumann, Laguna Beach, and Richard P. Eddy, Gardena, both of Calif., assignors to Excellon Industries, Calif.

Filed Jan. 23, 1984, Ser. No. 573,297
Int. Cl.[4] H01J 3/14
U.S. Cl. 250—235 30 Claims



1. In a flying spot scanner having a scanning energy beam that strikes a medium surface at impingement points along a scan line, said scan line extending in a first direction, and wherein the medium and energy beam are relatively shifted in a second direction to provide a plurality of successive scan lines mutually spaced along the medium, said scanner being constructed and arranged to provide said impingement points at preselected positions along each of a number of scan lines on a medium surface that lies in a predetermined nominal plane, positions of said points on said scan lines being subject to error caused by deviation of said medium surface from said nominal plane, apparatus for decreasing said error comprising

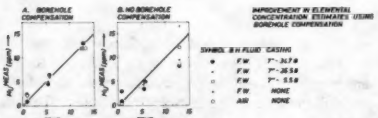
means for sensing deviation of said medium surface from said nominal plane at each one of a group of said scan lines, and

means for shifting said impingement points along each scan line of said group by an amount related to the medium surface deviation sensed for respective ones of the scan lines of said group.

4,585,939
MULTI-FUNCTION NATURAL GAMMA RAY LOGGING SYSTEM

Dan M. Arnold, and Harry D. Smith, Jr., both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 5, 1983, Ser. No. 539,764
Int. Cl.[4] G01V 5/06
U.S. Cl. 250—256 11 Claims


A. BOREHOLE COMPENSATION
B. NO BOREHOLE COMPENSATION
IMPROVEMENT IN ELEMENTAL CONCENTRATION ESTIMATES USING BOREHOLE COMPENSATION

1. A method for natural gamma ray spectral logging of a well borehole to determine the relative elemental abundances of uranium, potassium, and thorium gamma rays in earth formations by comparison with standard gamma ray calibration spectra of uranium, potassium, and thorium taken in standard boreholes having standard geometrical and constituent properties, comprising the steps of:

(a) obtaining with a borehole measurement system an unknown gamma ray energy spectrum in a measurement borehole having non-standard borehole conditions, said unknown gamma ray spectrum comprising gamma ray intensities measured in at least four energy bands corresponding to a first energy band containing the 2.61 MeV thorium decay peak, a second energy band containing the 1.76 MeV uranium decay peak, a third energy band containing the 1.46 MeV potassium decay peak, and one or more additional energy bands for monitoring the shape of said unknown gamma ray spectrum as a function of elemental concentrations and borehole conditions,

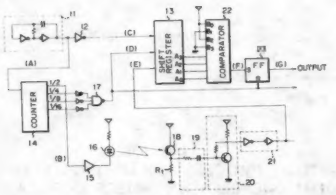
(b) deriving an elemental sensitivity matrix from borehole condition information supplied by a source other than the detector, and

(c) combining said sensitivity matrix and said gamma ray intensity information in said at least four energy bands to derive elemental abundancies of potassium, uranium, and thorium.

4,585,940
OPTICAL DETECTOR

Kenichi Iyama, Chiba, and Toru Hosaka, Tokyo, both of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,873
Claims priority, application Japan, Jul. 23, 1983, 58-134927
Int. Cl.[4] G01J 1/00
U.S. Cl. 250—336.1 2 Claims



1. An optical detecting apparatus comprising:

oscillation means for providing an oscillation signal,

divider means for dividing said oscillation signal according to a first predetermined ratio and providing a light source flash signal of frequency higher than that of an expected disturbance light and an operating time signal divided according to a second ratio a plurality of times longer than said first predetermined ratio,

an invisible light source means for blinking according to said light source flash signal,

a light receptive element for receiving output light from said invisible light source,

shift means for successively shifting a light signal receptive to said light receptive element by a clock input synchronous with said oscillation signal during the time when said operating time signal is inputted,

comparator means for comparing the signal output from said shift means with a set value, and

light detection signal output means adapted to be set by a coincidence signal outputted from said comparator means and reset when said operating time signal is terminated.

4,585,941
DOSIMETRY SYSTEM FOR STRONTIUM-RUBIDIUM INFUSION PUMP

Brian C. Bergner, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 28, 1983, Ser. No. 470,840
Int. Cl.[4] G01T 1/20
U.S. Cl. 250—363 S 7 Claims

1. A dosimetry system for a strontium-rubidium generator comprising:

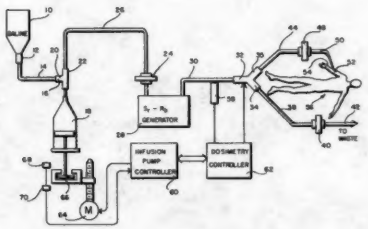
(a) a photomultiplier tube, having a face through which input signals in the form of light are received;

(b) a plastic scintillator mounted on said face;

(c) means for reflecting back into said tube any light which scintillates from the plastic scintillator;

(d) means for preventing stray light from striking said plastic scintillator; and

(e) a single channel analyzer electrically connected to said photomultipler tube for receiving pulses from said photo-



multiplier tube, said single channel analyzer comprising a very high speed comparator which receives input pulses from said photomultipler tube including means for analyzing input pulses having pulse widths of significantly less than 50 nanoseconds.

4,585,942

TRANSMISSION ELECTRON MICROSCOPE

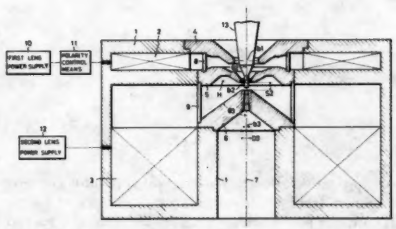
Katsushige Tsuno, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Feb. 29, 1984, Ser. No. 584,712

Claims priority, application Japan, Mar. 17, 1983, 58-45064; Oct. 6, 1983, 58-187392

Int. Cl.[4] G21K *1/08*; H01J *37/00*

U.S. Cl. 250—396 ML **8 Claims**



1. A transmission electron microscope having EM and CBED modes comprising objective lens comprising upper, middle and lower magnetic pole pieces installed inside a yoke enveloping the first and second excitation coils so that a first magnetic lens field between said upper and middle magnetic pole pieces is generated by means of said first excitation coils and its first lens power supply and a second magnetic field between said middle and lower magnetic pole pieces is generated by said second excitation coil and its second lens power supply, a specimen holder for locating a specimen in the midst of the second magnetic lens field and means for changing the polarity of said first magnetic field and adjusting the magnetic fields whereby in the EM mode the polarities are opposed and in the CBED mode the polarities are not opposed and in either mode the specimen remains at its fixed location along the optical axis.

4,585,943

ELECTRON BEAM EXPOSURE APPARATUS

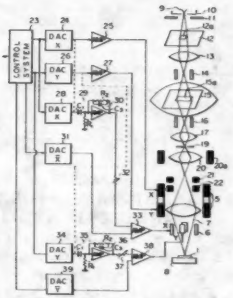
Hiroshi Yasuda, and Haruo Tsuchikawa, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 9, 1983, Ser. No. 502,571

Claims priority, application Japan, Jun. 11, 1982, 57-100422

Int. Cl.[4] H01J *37/00*

U.S. Cl. 250—396 R **4 Claims**



1. An electron beam exposure apparatus for selectively exposing a desired area of a medium to be processed with an electron beam, comprising:

electron emitting means for emitting the electron beam;

control means for providing a first digital signal and a second digital signal, the position on the medium where the electron beam is irradiated being determined by the first and second digital signals;

deflection means, operatively connected to said control means, for deflecting the electron beam, in response to the first and second digital signals, so as to expose the desired area of the medium, said deflection means comprising electromagnetic deflection means and electrostatic deflection means, a first analog signal, corresponding to the first digital signal, being supplied to said electromagnetic deflection means and a second analog signal, corresponding to the second digital signal, being supplied to said electrostatic deflection means; and

compensation signal generating means, operatively connected to said deflection means, for receiving the first analog signal and supplying a compensation signal, in accordance with the first analog signal, to said electromagnetic deflection means to compensate for a position error of the electron beam on the medium due to an eddy current generated in said electron beam exposure apparatus, said compensation signal generating means including:

a digital to analog converter, operatively connected to said control means, for providing the first and second analog signals in response to the first and second digital signals, respectively; and

a first differential circuit, operatively connected to said digital to analog converter, for providing the compensation signal in response to the first analog signal.

4,585,944

RADIATION IMAGE STORAGE PANEL

Masanori Teraoka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 4, 1983, Ser. No. 455,610

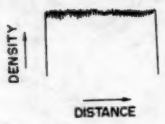
Claims priority, application Japan, Jan. 14, 1982, 57-4448

Int. Cl.[4] G03C *5/16*

U.S. Cl. 250—484.1 **6 Claims**

1. A radiation image storage panel comprising at least one stimulable phosphor layer, and one or more layers provided on the stimulating ray incidence side of said stimulable phosphor layer, each of said one or more layers satisfying the condition

of $dav \times \mu \geqq 1.05 \times \lambda$ wherein dav designates the average thickness of the layer, μ designates the refractive index of the layer, and λ designates the wavelength of stimulating rays; wherein



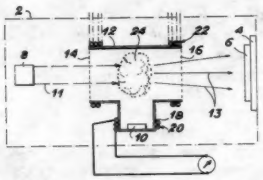
an adhesive layer and a protective film are provided, in this order starting from said stimulable phosphor layer side, on said stimulating rays incidence side.

4,585,945

PROCESS AND APPARATUS FOR IMPLANTING PARTICLES IN A SOLID

Michel Bruel, Veurey; Alain Soubie, St. Egreve, and Philippe Spinelli, La Tronche, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 8, 1983, Ser. No. 559,439
Claims priority, application France, Dec. 10, 1982, 82 20720
Int. Cl.[4] H01J *37/317*
U.S. Cl. 250—492.2 **10 Claims**



1. A process for the implantation of particles in a solid, in which a substantially parallel beam of high-energy primary particles is produced and in the path of said substantially parallel beam of high-energy primary particles is placed secondary particles which, by interaction with the high-energy primary particles, are projected towards the target also with an adequate energy to penetrate it, wherein the secondary particles are in the gaseous state, said gas occupying an area facing the target.

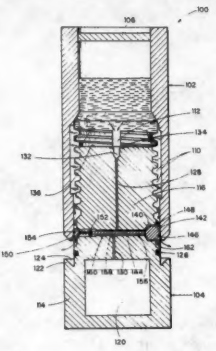
4,585,946

SELF-CONTAINED UNDERWATER DRAINAGE SYSTEM

Kurt I. Snyder, Acme, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1984, Ser. No. 585,064
Int. Cl.[4] G21F *5/00*
U.S. Cl. 250—506.1 **16 Claims**

1. A container assembly for draining a retained liquid therefrom, said assembly comprising a container having an opening including a plurality of internal threads, a closure removably received within said opening, said closure includes a plurality of external threads and said closure is threadingly received within said container opening, said closure having a liquid egress path communicating between the interior and exterior of said container, said internal threads of said container include a channel communicating with said liquid egress path within said closure for permitting the draining of said retained liquid therethrough from the interior of said container to the exterior thereof, a source of compressed gas within said closure, and control means within said closure for controlling the discharge of said compressed gas from said source into said interior of said container for draining a retained liquid therefrom through said liquid egress path, said control means operative for discharging said compressed gas by engagement of said control means with said container.

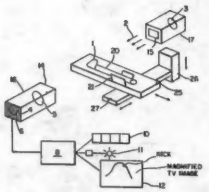


4,585,947

PHOTODETECTOR ARRAY BASED OPTICAL MEASUREMENT SYSTEMS

Nicholas Liptay-Wagner; Roland Renaud, both of Windsor; Timothy R. Pryor, Tecumseh, and Donald A. Clarke, Windsor, all of Canada, assignors to Diffracto, Ltd., Windsor, Canada

Division of Ser. No. 163,290, Jun. 26, 1980, Pat. No. 4,394,683.
This application Feb. 25, 1983, Ser. No. 470,262
Int. Cl.[4] G01N *21/86;* H04N *7/18*
U.S. Cl. 250—560 **37 Claims**



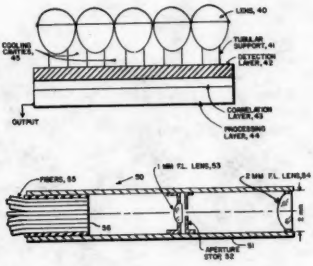
1. An apparatus for sorting parts, said apparatus comprising: a vee-shaped track including at least one portion through which light can be transmitted; means for feeding a part to the track so that the part moves along the track; a two-axis photodetector array positioned along the track adjacent to said at least one portion thereof; a flash tube positioned along said track adjacent to said at least one portion thereof on the opposite side of the track from said photodetector array; a lens for imaging light from the part onto said photodetetor array; means for detecting the position of the part and for providing an output when the part is in a predetermined position relative to the photodetector array; means responsive to the output of said detecting means, for pulsing said flash tube to provide an image of the part formed by said lens on said photodetector array; means connected to the output of the photodetector array for determining at least one dimension of the part from said image; means for storing a reference value for said at least one dimension of the part; means for comparing the determined dimension with the stored dimension; and means for sorting the part based on the comparison between the determined dimension and the stored dimension.

4,585,948

NON-SCANNING INTEGRATED OPTICAL SYSTEM WITH WIDE FIELD OF VIEW SEARCH CAPABILITY

Richard T. Schneider, Gainesville, and James F. Long, Freeport, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 15, 1983, Ser. No. 475,676
Int. Cl.[4] G02B 27/00; H01J 3/14
U.S. Cl. 250—578 8 Claims



1. An integrated multiaperture optical system for viewing a scene, forming an image thereof and detecting and identifying targets therefrom, said optical system comprising;

a two dimensional array of lens aperture menbers, each said lens aperture member comprising a cylindrical member having first and second lenses disposed therein, said lenses being spaced apart and movable along the major axis of said cylindrical member, each said lens aperture member being oriented to direct electromagnetic wave energy from a discrete region of said scene to a discrete portion of a common locus, the organization and arrangement of said lens aperture members being such that individual discrete portions of the common locus defined by adjacent lens aperture members are substantially contiguous and, collectively, the total of said discrete portions receive electromagnetic wave energy from the total scene being viewed, whereby a quantized replica of said scene is displayed on said common locus,

detector means located at said locus and receiving electromagnetic wave energy from said lens aperture members, said detector means comprising a multi-element detector for each said lens aperture member, each element of each said multi-element detector generating data signals in response to received electromagnetic wave energy,

a correlation circuit having a memory for each element of each said multi-element detector, each said memory receiving and storing data from its associated detector element, and

computer means having a memory matrix, said memory matrix receiving and storing data from said correlation circuit memories and said computer means processing the data stored in said memory matrix.

4,585,949

METHOD OF AND APPARATUS FOR SHAFT POWER GENERATION

Takashi Takahashi, 26-18, Kamisoshigaya 1, Setagaya-ku, Tokyo, Japan (157)

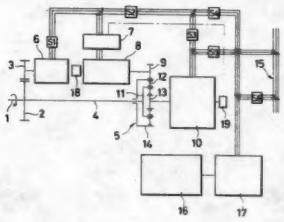
Filed Oct. 4, 1984, Ser. No. 657,450
Claims priority, application Japan, Oct. 5, 1983, 58-185153
Int. Cl.[4] F16H 37/08
U.S. Cl. 290—1 C 8 Claims

1. A method of shaft power generation in which mechanical power is taken out from a main engine whose number of revolutions varies and is employed to drive a main generator at its rated number of revolutions, thereby generating electric power, said method comprising the steps of:

dividing through gears the mechanical power taken out from said main engine into two portions for respective systems;

inputting one of the portions of the divided mechanical power directly to a differential planetary gear mechanism;

inputting the other portion of the divided mechanical power to said differential planetary gear mechanism through a subsidiary generator, a thyristor controller and a thyristorized motor, each of which has a capacity which is equal to a value obtained by adding a slight allowance to a value



obtained by multiplying the capacity of said main generator by the ratio between a first value and a second value, said first value being obtained by the difference between the lowest and highest number of revolutions of said main engine of the range within which the mechanical power therefrom is employed for power generation, said second value being said highest number of revolutions, thereby combining into one said two portions of the divided mechanical power; and

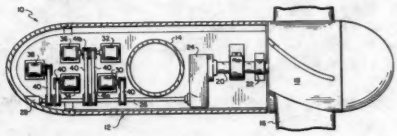
driving said main generator at its rated number of revolutions by the combined mechanical power output from said differential planetary gear mechanism.

4,585,950

WIND TURBINE WITH MULTIPLE GENERATORS

Arnold M. Lund, 1210 Avocado Ave., Escondido, Calif. 92026

Filed Dec. 6, 1984, Ser. No. 678,838
Int. Cl.[4] F03D 7/00
U.S. Cl. 290—44 13 Claims



1. A wind powered generator comprising:

an impeller;

means for supporting the impeller for rotation by the wind;

a plurality of generators each having an input shaft;

means providing a continuous driving connection between the impeller and the input shaft of each of the generators for continuous co-rotation thereof; and

control means responsive to wind velocity for successively activating the generators as the wind velocity increases and for successively de-activating the generators as the wind velocity decreases.

4,585,951

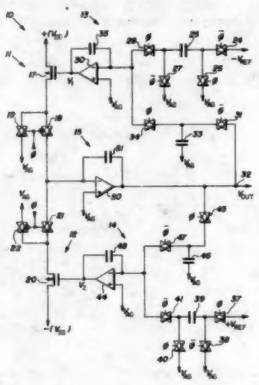
PRECISION TRIANGLE WAVEFORM GENERATOR

Henry Wurzburg, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1983, Ser. No. 544,670

Int. Cl.[4] H03K *4/48*

U.S. Cl. 307—228 **12 Claims**



1. A precision triangle waveform generator for providing a triangular output signal of predetermined frequency having precise valued peaks, comprising:

a first transistor having a first current electrode coupled to a terminal for receiving a positive supply voltage, a control electrode, and a second current electrode;

first switching means for alternately connecting the second current electrode of the first transistor between a first reference voltage and an input node;

a second transistor having a first current electrode connected to a terminal for receiving a negative supply voltage, a control electrode, and a second current electrode;

second switching means for alternately connecting the second current electrode of the second transistor to the first reference voltage and to the input node;

control means coupled to the control electrodes of the first and second transistors for controlling the first and second transistors in response to both a second reference voltage and the output signal; and

integrating amplifier means having an input connected to the input node, and an output for providing the triangular output signal having positive and negative peaks proportional to the reference voltage.

4,585,952

DIGITAL WAVEFORM SHAPING CIRCUIT

Takaaki Yamamoto, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

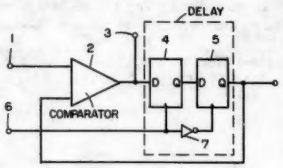
Filed Mar. 4, 1983, Ser. No. 472,326

Claims priority, application Japan, Mar. 4, 1982, 57-34482; May 10, 1982, 57-76541

Int. Cl.[4] H03K *5/01*

U.S. Cl. 307—268 **10 Claims**

1. In a device for reproducing a digital signal recorded on a recording medium, a digital signal waveform shaping circuit comprising, at least one comparator having a first input for receiving an input signal corresponding to said digital signal and a second input for receiving a threshold level signal, a delay circuit comprising at least one pair of cascade connected flip-flops, an input to the first flip-flop of said at least one pair of flip-flops being connected to the output of said at least one comparator, the second input of said comparator being responsive to the output of the second flip-flop of said at least one pair of flip-flops, synchronizing signal means for producing synchronizing signals to clock said first and second flip-flops of said at least one pair of flip-flops, first means for applying said



synchronizing signals to the clock input of said first flip-flop and second means for applying inverted synchronizing signals to the clock input of said second flip-flop.

4,585,953

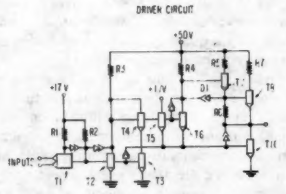
LOW POWER OFF-CHIP DRIVER CIRCUIT

Gene J. Gaudenzi, Purdys; John P. Norsworthy, Fishkill, both of N.Y.; Nghia V. Phan, Rochester, Minn., and Dennis C. Reedy, Stormville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1983, Ser. No. 515,419

Int. Cl.[4] H03K *17/60*

U.S. Cl. 307—270 **14 Claims**



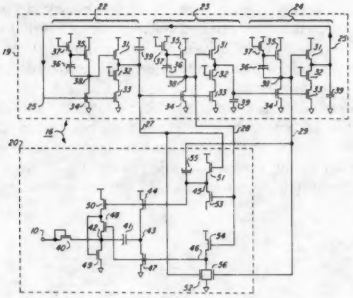
1. A driver circuit for interfacing between relatively small electrical loads on-chip and relatively larger electrical loads off-chip such as bipolar gate arrays, said driver circuit including a first potential source for generating logic levels to go off-chip, and a second potential source lower than said first potential source, said driver circuit being of the type including a pull-down output transistor having an emitter, base and collector, said pull-down output transistor passing a low potential from its emitter to its collector to provide a low potential driver circuit output at its collector in response to a drive current received at its base, and control means responsive to an input signal for providing said drive current to said base of said pull-down output transistor, said control means comprising a drive current supply transistor having an emitter coupled to said base of said pull-down output transistor, a collector coupled to said second potential source, and a base, and means for providing said first potential to said base of said drive current supply transistor in accordance with said driver circuit input signal.

4,585,954

SUBSTRATE BIAS GENERATOR FOR DYNAMIC RAM HAVING VARIABLE PUMP CURRENT LEVEL

Masashi Hashimoto, Miho, Japan, and Chitranjan Reddy, Sugarland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 8, 1983, Ser. No. 512,078
Int. Cl.[4] H03K *3/354*
U.S. Cl. 307—296 R **11 Claims**



7. A substrate bias generator for a semiconductor device comprising:

oscillator means having outputs coupled to first pump circuit means,

means responsive to the substrate bias to control said oscillator means when the substrate bias exceeds a selected level, to reduce the output of said pump circuit means to a lower standby level,

a second pump circuit and means to activate said second pump circuit when an external clock is applied to said device.

4,585,955

INTERNALLY REGULATED POWER VOLTAGE CIRCUIT FOR MIS SEMICONDUCTOR INTEGRATED CIRCUIT

Yukimasa Uchida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 30, 1983, Ser. No. 556,686
Claims priority, application Japan, Dec. 15, 1982, 57-219617; Dec. 18, 1982, 57-222452; Dec. 27, 1982, 57-234046
Int. Cl.[4] G05F *1/575, 3/08;* H03K *19/003, 19/094*
U.S. Cl. 307—297 **16 Claims**

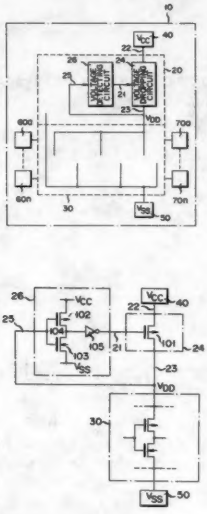
1. An MIS semiconductor integrated circuit comprising:

(a) a power source voltage terminal externally supplied with a power voltage;

(b) voltage dropping means, having a control terminal, a voltage input terminal connected to said power source voltage terminal to receive said power voltage and a voltage output terminal, for controllably dropping said power voltage and supplying said dropped power voltage to said voltage output terminal as a function of an input control signal supplied to said control terminal;

(c) voltage detection means, including a MISFET having a gate, for comparing said dropped power voltage at said voltage output terminal of said voltage dropping means to a prescribed threshold voltage level by inputting said dropped power voltage to said gate of said MISFET and for supplying a signal corresponding to the result of said comparison to said control terminal of said voltage dropping means as said input control signal; and

(d) an internal circuit including a CMOS inverter having a p channel and an n channel MISFET, with channel regions of said p channel and n channel MISFETs connected in series, said p channel and n channel MISFETs having a common gate and with an output obtained from a common node of said MISFETs and with said dropped power voltage from said voltage output terminal of said voltage



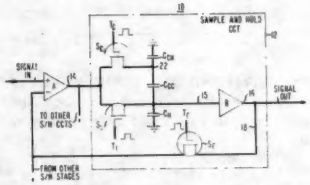
dropping means being supplied to one end of said series connected channel regions.

4,585,956

SWITCHED CAPACITOR FEEDBACK SAMPLE-AND-HOLD CIRCUIT

Hans P. Lie, Berkley Heights, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 426,293, Sep. 29, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,245
Int. Cl.[4] G11C *27/02*
U.S. Cl. 307—353 **9 Claims**



1. A sample-and-hold circuit apparatus of the type comprising:

an amplifier having an inverting input port, a noninverting input port, and an output port, one of the input ports of said amplifier being connected to a signal input node;

a buffer having an input port and an output port;

a sampling switch connected between the amplifier output port and the input port of said buffer;

a holding capacitor connected between the input port of said buffer and a reference potential;

a feedback means connected to the output port of said buffer and coupled to the other input port of said amplifier, and

a correction sample-and-hold means having an input node and an output node, the input node being connected to the output port of said amplifier, said correction sample-and-hold means being responsive to switching feedthrough

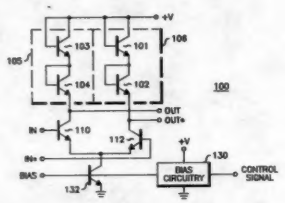
error generated by said sampling switch, the output node of said correction sample-and-hold means being coupled to one side of said holding capacitor by an attenuating means for transferring a correction charge to said holding capacitor.

4,585,957

DIODE LOAD EMITTER COUPLED LOGIC CIRCUITS

William J. Ooms, Ft. Lauderdale, Fla., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 25, 1983, Ser. No. 488,333
Int. Cl.[4] H03K *19/013, 19/086, 3/289*
U.S. Cl. 307—455 **12 Claims**



1. A gating circuit responsive to first and second complementary input signals from a signal source for generating first and second complementary output signals, said circuit comprising:

first and second switching transistors each having emitter terminals intercoupled to one another, base terminals coupled to said first and second input signals, respectively, and collector terminals providing said first and second output signals, respectively;

means coupled to the emitter terminals of the first and second switching transistors for generating a predetermined bias current; and

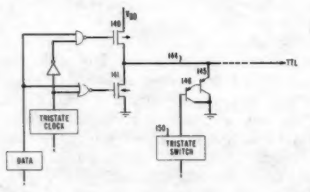
first and second load means coupled between a power source and collector terminals of the first and second switching transistors, respectively, said first and second switching transistors, respectively, said first and second load means each being comprised of at least two series coupled, forward biased transistors interconnected to one another for continuously conducting current from said power source and each having an emitter terminal, a base terminal and a collector terminal connected to the base terminal.

4,585,958

IC CHIP WITH NOISE SUPPRESSION CIRCUIT

Michael S. Chung, Bridgewater, and Masakazu Shoji, Warren, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1983, Ser. No. 567,367
Int. Cl.[4] H03K *19/092, 19/096*
U.S. Cl. 307—473 **5 Claims**



1. In combination

(a) a utilization means;

(b) a semiconductor integrated circuit chip including a data path for generating binary data signals and an internal databus connected to the data path for receiving the binary signals generated by the data path;

(c) an external databus connected for transmitting the binary signals from the internal databus to the utilization means;

(d) clock means for producing a clock sequence of alternating driven and idle phases;

(e) amplifier means, connected for receiving the binary signals from the internal databus and responsive to the clock sequence of alternating driven and idle phases, for restoring the binary signals to prescribed high and low signal levels in accordance with the binary signals, and connected to the external databus for delivering thereto during each of the driven phases the thus restored binary signals and for floating the external databus during each of the idle phases; and

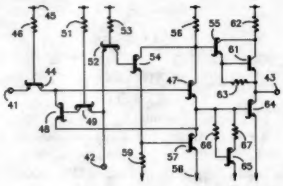
(f) first means for reducing the voltages of the external databus from the high level toward a prescribed intermediate voltage level, which lies between said high and low levels, during each of the idle phases and for floating the external databus during each of the driven phases.

4,585,959

TRI-STATE LOGIC GATE HAVING REDUCED MILLER CAPACITANCE

Ira E. Baskett, and Cleon Petty, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1983, Ser. No. 566,768
Int. Cl.[4] H03K *19/003, 19/088, 19/092, 17/60*
U.S. Cl. 307—473 **2 Claims**



1. A gate circuit having a first input terminal responsive to a first input signal, a second input terminal responsive to a second input signal, said first and second input signals each having a first and second state, and an output terminal, comprising:

means coupled to said first input terminal, said second input terminal, and said output terminal for generating an output signal having a first and second state dependent upon said states of said first and second input signals, said means including a control transistor having a collector and an emitter;

a first transistor having a collector coupled to said collector said control transistor;

a second transistor having a collector coupled to said emitter of said control transistor, and a base coupled to said emitter of said first transistor;

a third transistor having a collector coupled to a base of said first transistor;

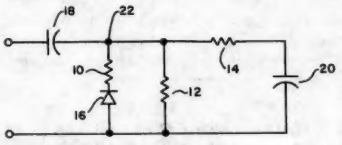
a fourth transistor having an emitter coupled to an emitter of said third transistor and said second input terminal; and

a fifth transistor having a base coupled to a collector of said fourth transistor, a collector coupled to a base of said control transistor, and an emitter coupled to the collector of said second transistor.

4,585,960
PULSE WIDTH TO VOLTAGE CONVERTER CIRCUIT

Alfred J. Cann, Wilton, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 11, 1984, Ser. No. 659,808
Int. Cl.[4] G06G 7/12; H03K 5/08
U.S. Cl. 307—490 8 Claims

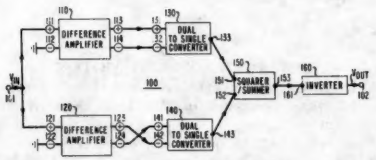


1. A pulse width to voltage converter circuit, comprising:
first and second input terminals;
a capacitor coupled at one side thereof to said first input terminal;
a first resistance element coupled at one side thereof to the other side of said capacitor;
a diode coupled between the other side of said resistance element and said second input terminal; and
a second resistance element coupled across said first resistance element and said diode, wherein the ration of said first resistance element to said second resistance element is approximately equal to the nominal duty factor of the signals to be applied to the circuit.

4,585,961
SEMICONDUCTOR INTEGRATED CIRCUIT FOR SQUARING A SIGNAL WITH SUPPRESSION OF THE LINEAR COMPONENT

Steven J. Daubert, Morristown, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 19, 1984, Ser. No. 571,953
Int. Cl.[4] G06G 7/20
U.S. Cl. 307—491 13 Claims

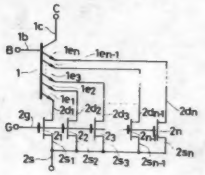


1. In an integrated circuit, a circuit arrangement for producing an output signal which is a prescribed nonlinear function of an incoming signal comprising a pair of identical dual-ended linear amplifiers, each of the amplifiers connected for receiving the incoming signal and each of the amplifiers connected for delivering its output to a different one of a pair of identical dual-to-single-ended linear converters, and a nonlinear/summing device for nonlinearly transforming and summing the single-ended outputs of the converters to produce the output signal, in which coupling means of one of the dual-ended amplifiers cross-couple a pair of output terminals of the one amplifier to a pair of input terminals of the corresponding converter.

4,585,962
SEMICONDUCTOR SWITCHING DEVICE UTILIZING BIPOLAR AND MOS ELEMENTS

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 29, 1983, Ser. No. 518,696
Claims priority, application Japan, Aug. 6, 1982, 57-136261
Int. Cl.[4] H03K 17/12
U.S. Cl. 307—570 9 Claims



1. A semiconductor switching device comprising:
a bipolar transistor having a collector electrode connected to a collector terminal of said switching device, a base electrode connected to a base terminal of said switching device, and a plurality of emitter electrodes;
a plurality of MOS transistors wherein the number of said MOS transistors is the same as the number of emitter electrodes of said bipolar transistors, and wherein said MOS transistors each have a gate electrode coupled to a gate terminal of said switching device;
first connection means for connecting each of the plurality of emitter electrodes of said bipolar transistor to a corresponding drain electrode of said MOS transistors;
second connection means for connecting in common the source electrodes of said MOS transistors to an emitter terminal of said switching device;
means for transmitting a control signal to said gate terminal of said switching device to control the ON-OFF states of said MOS transistors; and
means for providing a bias signal to said base terminal of said switching device so that said bipolar transistor will be driven into an ON state by said bias signal when said control signal drives said MOS transistors into an ON state to provide a main current flow between said collector and emitter terminals of said switching device.

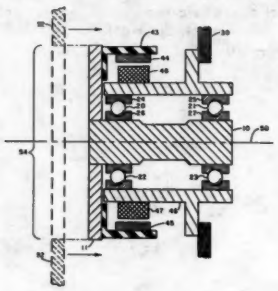
4,585,963
BRUSHLESS DIRECT CURRENT MOTOR WITH INVERTED MAGNET CLIP

Richard A. Wilkinson, Jr., and William C. Hunt, both of Boulder County, Colo., assignors to Storage Technology Partners II, Louisville, Colo.

Continuation-in-part of Ser. No. 437,988, Nov. 1, 1982. This application Oct. 11, 1984, Ser. No. 659,747
Int. Cl.[4] H02K 7/00
U.S. Cl. 310—67 R 6 Claims

1. An improved, low cost, compact brushless direct current motor for use in a disk drive device comprising:
a housing having motor windings selectively spaced around an outer surface thereof, and means for mounting said housing to said disk drive device;
a shaft rotatably mounted in an opening extending through said housing, said rotatable mounting being realized with at least two non-resilient friction reducing bearings respectively placed at each end of said shaft and at corresponding ends of said opening in said housing;
a spindle hub affixed to a first end of said shaft, and upper side of said spindle hub being adapted for engagement with the center of a disk to be driven by said motor;
a magnet cup attached to said spindle hub, said magnet cup including at least one permanent magnet, said magnet cup

being positioned within the periphery of said spindle hub such that said magnet maintains a selected juxtaposed, non-touching, relationship with an outer surface of said motor windings; and



means for sealing said opening in said housing at a second end of said shaft, whereby air is prevented from being pulled into the housing at the end opposite said spindle hub as said shaft and spindle hub rotate.

4,585,964

APPARATUS AND SYSTEM FOR TERMINATING THE WINDING WIRES OF A DYNAMOELECTRIC MACHINE

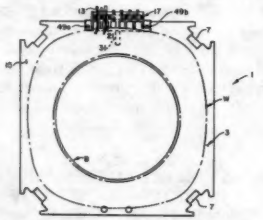
Eugene F. Hildebrandt, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 427,646, Sep. 29, 1982, Pat. No. 4,476,407. This application Sep. 7, 1984, Ser. No. 648,457

The portion of the term of this patent subsequent to Oct. 9, 2001, has been disclaimed.

Int. Cl.⁴ H02K *11/00*

U.S. Cl. 310—71 **7 Claims**



1. In a dynamoelectric machine having a stator, the latter including a core comprised of a stack of plate-like laminations of suitable ferromagnetic material, said core having a central bore therethrough and a plurality of slots extending generally radially outwardly of the core, at least one coil made up of a plurality of turns of magnet wire inserted in said slots thus constituting the windings of the motor, said winding having a first and a second end of said magnet wire, a terminal block of electrically insulative material affixed to said core, a plurality of receptacles therein, said dynamoelectric machine further having a rotor assembly received within said bore of said core and a rotor shaft, a support secured to said core for receiving and journalling said rotor shaft, a switch for energizing and de-energizing at least a portion of said winding, centrifugal responsive means for actuating said switch upon startup and shutdown of said dynamoelectric machine, said switch having at least one terminal extending sidewise therefrom, said switch being in operational relation with said centrifugal means and being spaced axially along said rotor shaft from one face of said core, wherein the improvement comprises: said terminal block being mounted on said one face of said core and having a plurality of receptacles therein for receiving a respective wire from said windings therein, said receptacles each being adapted to receive a terminal thereby to make electrical connection with a respective winding wire, a thermal protector interposed between said terminal block and said switch, said thermal protector having a first terminal in electrical contact with at least one of said magnet wire terminals received in said receptacles of said terminal block and another terminal proximate said switch, terminal means carried by said terminal block for electrically and mechanically mating with said at least one switch terminal thereby to make electrical contact between the switch terminals and the windings.

4,585,965

RADIO ELECTRIC WAVE GENERATOR FOR ULTRA-HIGH FREQUENCIES

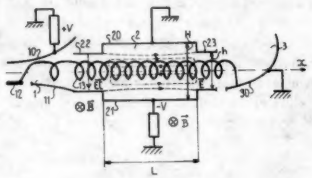
Georges Mourier, Le Port, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 2, 1984, Ser. No. 595,976

Claims priority, application France, Apr. 6, 1983, 83 05602

Int. Cl.⁴ H01J *25/34*

U.S. Cl. 315—39.3 **7 Claims**



1. A wave generator for ultra-high frequencies based on an interaction of the cyclotronic type between an electron beam propagating between an election gun and a collector and a high frequency electromagnetic field in a resonating structure through which the beam flows, said electron beam, moving along a cycloidal path essentially about a longitudinal axis in a transverse magnetic field under the effect of a drift velocity created by a continuous electric field characterized in that the resonating structure comprises first and second opposed planar electrodes defining a passage therebetween through which the electron beam traverses, the two electrodes adapted to be operated at different potentials and being in at least their central positions spaced apart by a distance H slightly greater than $n\lambda/2$ where n is a whole number and λ the wavelength of the resonant frequency of said resonating structure.

4,585,966

SUBMERGED ELECTRIC MOTOR

Mitsuhiro Nishida; Sakuei Yamamoto, and Hiroshi Inao, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1984, Ser. No. 662,974

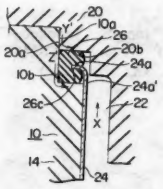
Claims priority, application Japan, Oct. 20, 1983, 58-197778

Int. Cl.⁴ H02K *5/12*

U.S. Cl. 310—87 **16 Claims**

1. A submerged electric motor comprising a stator encapsulated by a hollow cylindrical molded member of a synthetic resin except for an inner cylindrical surface thereof, a hollow cylindrical can disposed on the inner cylindrical surface of said stator and extended to be disposed on an inner cylindrical surface of said molded member flush with that of said stator except for both end portions, a bracket connected on one end portion to an associated end portion of said molded member of said stator through a socket and spigot joint and journalling a rotor shaft, said socket and spigot joint including at least cylindrical surfaces of said molded member and said bracket coaxial with the common central axis thereof, said cylindrical surface of said bracket abutting against an end portion of said cylindri-

cal surface of said molded member located on said associated end portion thereof, said can having a radially outwardly extending flange adjacent to said bracket extending above a radial bottom surface in the form of an annulus connected on a radially outer periphery to said cylindrical surface of said molded member, and an annular sealing member located between and abutting against at least one of a top and an end surface of said flange and at least one of said cylindrical surfaces and said radial botton surface of said molded member, at least one portion of said sealing member abutting against a



radial front end surface in the form of an annulus of said bracket connected on a radially outer periphery to said abutting cylindrical surface thereof to be put in spaced parallel relationship with said radial bottom surface of said molded member, said annular sealing member having a radially inner surface having an annular groove therein, said flange fitting into said groove, whereby said sealing member is compressed enough to prevent a cooling and lubricating liquid flowing in said bracket from flowing out from said bracket and also prevent ambient water from entering the interior of said bracket.

4,585,967

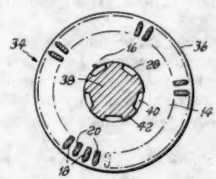
ROTOR OF AC DYNAMOELECTRIC MACHINE WITH IMPROVED COOLING AND STABILITY AND METHOD OF MAKING THE SAME

John A. Mayer, Clifton Park, and William H. Miller, Albany, both of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Continuation of Ser. No. 544,145, Oct. 21, 1983, abandoned. This application Nov. 14, 1984, Ser. No. 671,368

Int. Cl.⁴ H02K *1/00*

U.S. Cl. 310—217 **6 Claims**



1. A rotor for an AC dynamoelectric machine comprising:
a shaft including a plurality of flutes extending axial
a surface of said shaft, with portions of the surface between said flutes forming a plurality of lands;
a stack of substantially annular laminations having an axial hole extending therethrough and having a substantial number of laminations shrunk-fit on said lands;
the total circumferential surface of said lands when divided by the total circumferential surface of said shaft being about 50 percent.

4,585,968

DEVICE FOR HOLDING AND CENTERING OF A BRUSH HOLDER WASHER, DURING ASSEMBLY, ON AN ELECTRIC ROTATING COMMUTATOR MACHINE

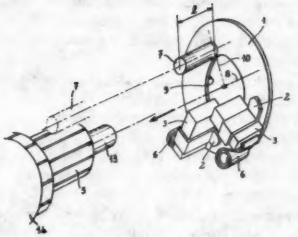
Francisco Cambrodon, Francheville, France, assignor to Societe de Paris et du Rhone, Lyons, France

Filed Jun. 28, 1984, Ser. No. 625,628

Claims priority, application France, Jul. 1, 1983, 83 11370

Int. Cl.⁴ H02K *13/00*

U.S. Cl. 310—239 **10 Claims**



1. A device for holding and centering a brush holder washer during assembly of an electric rotating commutator machine of the type including a casing housing a rotor and a stator both extending axially of the casing, a flange at one end of the casing supporting a bearing for the rotor, the washer supporting two brushes, each mounted in a holder, disposed adjacent one another along axes forming an angle different from 180°, the device comprising:
at least one holding piece, integral with the brush holder washer, extending approximately axially of the casing, the at least one holding piece being located on said washer in a zone diametrically opposite the zone in which the two brush holders are mounted and being located at a distance from the axis of the washer slightly greater than the radius of the commutator so that the pressure of the brushes exerted during mounting on the commutator causes said at least one holding piece to rest against said commutator whereby the axis of the washer is held substantially coincident to the axis of the commutator.

4,585,969

PRECISION ROTARY MOVING MECHANISM USING PIEZOELECTRIC DRIVE ELEMENTS

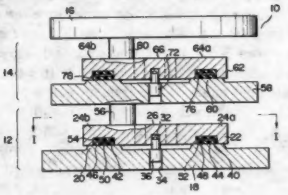
Kuniyoshi Tanaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 15, 1985, Ser. No. 702,074

Claims priority, application Japan, Jun. 25, 1984, 59-130539

Int. Cl.⁴ H01L *41/08*

U.S. Cl. 310—328 **7 Claims**



1. A precision moving mechanism comprising:
a first slight moving mechanism unit including:
a first base,
a first drive disk movably mounted on the first base and having first and second movable sections,
a first piezoelectric element connected at one end to the first

movable section and at the other end to the second movable section,

a first member for attaching the first movable section to the first base, and

a second member for attaching the second movable section to the first base;

a second slight moving mechanism unit including:

a second base supported by the first or second movable section of said first slight moving mechanism unit,

a second drive disk movably mounted on the second base and having third and fourth movable sections,

a second piezoelectric element connected at one end to the third movable section and at the other end to the fourth movable section,

a third member for attaching the third movable section to the second base, and

a fourth member for attaching the fourth movable section to the second base;

a table supported by the third or fourth movable section of said second slight moving mechanism unit;

a drive means for alternately driving the first and second members and alternately driving the third and fourth members, and for alternately driving the first or second member for attaching the movable section supporting said second base to said first base, and the third or fourth member for attaching the movable section supporting said table to said second base; and

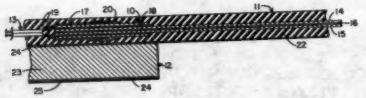
a voltage generating means for applying a voltage to the first and second piezoelectric elements, said voltage varying in synchronism with the drive cycle of said first and third members and causing said first and second piezoelectric elements to expand and contract with a phase difference of 180°.

4,585,970

FLEXIBLE PIEZOELECTRIC SWITCH

Jan G. Koal, and Carl V. Wells, both of NE 820 California St., Pullman, Wash. 99163

Filed Mar. 11, 1985, Ser. No. 710,226
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—331 **5 Claims**



1. A flexible polymeric piezoelectric switching device, for use on a human body, to be activated by relative motion of two spaced portions of the body relative to each other, comprising, in combination:

a sensing element having at least two similarly configured, sheet-like polymeric piezoelectric sensors in stacked array with electric interconnection to enhance the output of the combined sensors,

said sensors being of different sizes and arrayed so that no peripheral edges are coincident with each other and;

the adjacent sides of the sensors being adhered to each other by relatively thin, adhesive and;

connecting circuitry including electrically conductive metallic foils having substantial surface contact with the outer surfaces of each of the piezoelectric elements at spaced distance inwardly of the periphery thereof,

the adjacent surfaces of the metallic foils and piezoelectric elements being adhered by electrically conductive adhesive and

said foils having electrically conductive wires interconnected thereto, and extending away therefrom, by an electrically conductive fastening means;

an encapsulation member surrounding the arrayed sensing elements and connecting circuitry with the interconnecting wires extending therefrom; and

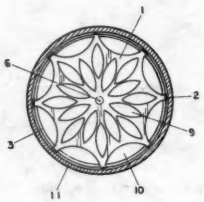
supports carried at opposite end parts of the encapsulation member and extending inwardly toward each other to a spaced distance, each of said supports having adhesive on their outer surfaces opposite their interconnection with the encapsulation member to releasably adhere to the surface of a human body.

4,585,971

FLAT CIRCULAR FOIL-FILAMENT LAMP

John E. Clegg, 2320 Keystone Dr., Orlando, Fla. 32806

Filed Dec. 18, 1984, Ser. No. 682,959
Int. Cl.[4] H01J *1/15*
U.S. Cl. 313—341 **1 Claim**



1. A flat circular foil-filament electric lamp comprising;

a planar circular foil filament (1) occupying a horizontal plane and having a center occupying a vertical axis of the lamp;

said foil filament (1) having a series of arcuate perforations (9) disposed in a circular pattern therein;

said foil filament (1) having eight arcuate indentations (10) spaced at equal intervals around the perimeter thereof;

said foil filament (1) having eight mounting tabs (2) comprising integral radial extensions thereof spaced at equal intervals around the perimeter thereof between said indentations (10);

a central post conductor (6) comprising a rigid straight steel rod occupying said vertical axis and serving as mounting means for the center of said foil filament (1);

said post conductor (6) serving as means through which an electric current is conducted to said foil filament (1);

a ring conductor (3) occupying said horizontal plane and comprising a rigid annular steel rod serving as a frame to which said foil filament (1) is mounted by said mounting tabs (2);

said ring conductor (3) serving as means through which an electric current is conducted from said foil filament (1);

four peripheral post conductors (7) comprising rigid angular steel rods spaced at equal intervals around said ring conductor (3) and welded thereto as to means of support thereof;

said peripheral post conductors (7) serving as means through which an electric current is conducted from said ring conductor (3);

a reflective rear plate (5) comprising an aluminized glass disk mounted on said peripheral post conductors (7) parallel to said foil filament (1) and serving as means by which light is received and reflected back to said foil filament (1);

a bulb base (8) comprising a sealed cylindrical ceramic member in which said central post conductor (6) and said peripheral post conductors (7) are mounted; and

a bulb comprising a sealed evacuated glass chamber formed by a front bulb wall (4), a cylindrical bulb wall (11), a conical bulb wall (12), and said bulb base (8).

4,585,972
DISCHARGE LAMP ARC TUBES

Peter Hing, Birstall, England, assignor to Thorn EMI Limited, London, England

Continuation of Ser. No. 332,216, Dec. 18, 1981, abandoned. This application Jan. 10, 1985, Ser. No. 690,408

Claims priority, application United Kingdom, Dec. 20, 1980, 8040906

Int. Cl.⁴ H01J *61/22, 61/30, 61/36*

U.S. Cl. 313—636 **8 Claims**

1. An arc tube for a metal halide discharge lamp, said arc tube comprising an envelope of polycrystalline alumina, sapphire or a spinel and one or more cermet end closures hermetically sealed thereto by a sealing composition, said sealing composition consisting of one of:

(a) 2.00 to 5.0% by weight of nucleating agent selected from the group consisting of phosphorous pentoxide, titania, zirconia and chromia;

(b) 1.96 to 5.0% by weight of boric oxide; and,

(c) a member from the group consisting of HfO_2 and the rare earth oxides Y_2O_3, Yb_2O_3, La_2O_3, Dy_2O_3 and Eu_2O_3 present in an amount up to 10% by weight; and,

the remaining part of said sealing composition consisting of a mixture of silica, alumina and magnesia, there being from 13% to 21% by weight of alumina, and from 25% to 28% by weight of magnesia and the balance being silica.

4,585,973
TRAVELLING WAVE OR LIKE TUBES

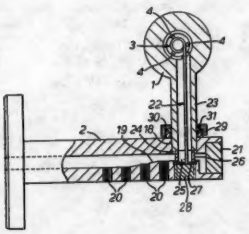
Ronald L. Finch, Chelmsford; Robert L. Wright, Coggeshall, and Graham C. T. Ball, Marks Tey, all of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Apr. 23, 1984, Ser. No. 602,926

Claims priority, application United Kingdom, Jan. 4, 1984, 8400106

Int. Cl.⁴ H01J *25/34*

U.S. Cl. 315—3.5 **13 Claims**



1. An electronic tube having an output lead which is required to provide input to a waveguide, said tube comprising a hollow output arm through which said output lead passes, and an end cap provided at the end of said hollow output arm and to which said output lead passes, said end cap including a tubular wall which provides a window for communication with said waveguide and a metal plate affixed to the tubular wall, and the arrangement being such that, when entered through an entry hole in one wall of said waveguide, said metal plate of said end cap abuts the inner surface of said waveguide opposite said entry hole.

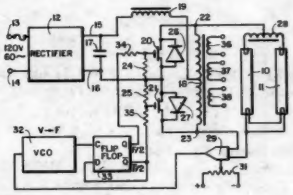
4,585,974
VARIBLE FREQUENCY CURRENT CONTROL DEVICE FOR DISCHARGE LAMPS

Edward H. Stupp, Spring Valley, N.Y., and Mark W. Fellows, Monroe, Conn., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 455,395, Jan. 3, 1983, Pat. No. 4,498,031. This application Dec. 7, 1984, Ser. No. 679,328

Int. Cl.⁴ H05B *37/02*

U.S. Cl. 315—307 **5 Claims**



1. A circuit for controlling a gas discharge lamp comprising, a pair of input terminals for a source of pulsating DC voltage, a variable frequency driven inverter having input means connected to said input terminals, said driven inverter comprising a push-pull transistor oscillator inverter including an inductor with a center tap thereof coupled to the output of an AC-DC rectifier circuit via said input terminals, a non-resonant coupling network including a reactive ballast impedance for coupling an output of said driven inverter to said discharge lamp, means responsive to the current flowing through said discharge lamp for monitoring the level of said lamp current, and frequency control means having an input coupled to said current monitoring means and an output coupled to said driven inverter for supplying a cycle-by-cycle frequency control signal thereto so as to alter the frequency of the driven inverter on a cycle-by-cycle basis as a function of the amplitude of lamp current and in a sense so as to regulate the lamp current within predetermined limits.

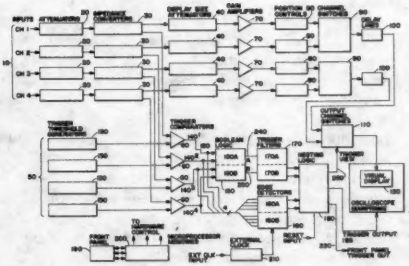
4,585,975
HIGH SPEED BOOLEAN LOGIC TRIGGER OSCILLOSCOPE VERTICAL AMPLIFIER WITH EDGE SENSITIVITY AND NESTED TRIGGER

Warren K. Wimmer, Tigard, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 21, 1983, Ser. No. 487,398

Int. Cl.⁴ G01R *13/28;* **H04L** *67/00;* **G05B** *19/02*

U.S. Cl. 315—392 **18 Claims**



1. An oscilloscope vertical amplifier for processing and displaying multiple analog input signals, said vertical amplifier comprising:

analog signal path means for receiving and processing said analog input signals for display on a viewing screen; and

digital trigger path means for deriving a display trigger signal from a selectable Boolean logic word combination of said analog input signals.

4,585,976

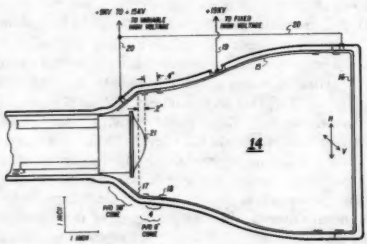
BEAM PENETRATION CRT WITH INTERNAL AUTOMATIC CONSTANT DEFLECTION FACTOR AND PATTERN CORRECTION

Ronald G. Reed, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 689,494, Jan. 7, 1985, abandoned, which is a continuation of Ser. No. 340,683, Jan. 19, 1982, abandoned. This application Aug. 7, 1985, Ser. No. 763,873

Int. Cl.[4] H01J *29/46, 29/56*

U.S. Cl. 315—370 **6 Claims**



1. A beam penetration CRT comprising:

an evacuated envelope including distal neck and faceplate portions separated by and joined to an intervening funnel portion;

means located within the neck for generating an electron geam traveling along a principal axis toward the faceplate;

means located within the neck and proximate the junction of the neck and funnel for deflecting the electron beam in the directions of first and second deflection axes each perpendicular to the principal axis;

a conductive funnel coating upon the interior surface of the funnel;

a coating of beam penetration phosphors upon the interior surface of the faceplate and electrically isolated from the conductive funnel coating;

an expansion mesh located in the path of the deflected electron beam and proximate the junction of the neck and funnel; and

a correction lens about the principal axis, located between the expansion mesh and the conductive funnel coating, the correction lens:

extending uniformly in a direction toward the neck until it is at least adjacent the expansion mesh;

extending in a direction toward plane of the faceplate as four lobes each located ninety degrees apart around the principal axis and each corresponding to a direction along an associated axis of deflection;

extending in a direction toward the plane of the faceplate as four intervening valleys each corresponding to a diagonal direction of deflection; and

being electrically isolated from the conductive funnel coating.

4,585,977

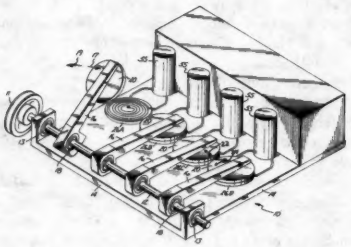
ELECTRONIC MOTOR

Dominic Arbisi, 13001 Berkshire Dr., Minnetonka, Minn. 55343, and Roger E. Mitchell, 3710 Vincent Ave. South, Minneapolis, Minn. 55410

Filed Dec. 4, 1984, Ser. No. 678,171

Int. Cl.[4] H02K *33/00*

U.S. Cl. 318—45 **32 Claims**



1. An electronic motor comprising:

a shaft mounted for rotation about a rotational axis;

a first lever arm positioned in a radial direction with respect to the shaft;

a first one-way clutch means for connecting an inner end of the lever arm to the shaft;

a first electrically conductive element attached to an outer end of the lever arm;

a first drive means positioned adjacent to the electrically conductive element for producing a first pulsed magnetic field generally tangential to a circumferential direction about the rotational axis when energized, the first magnetic field inducing circulating currents within the conductive element which in turn produce a second magnetic field, the first and second magnetic fields interacting to force the first lever arm to rotate in a first circumferential direction thereby engaging and rotating the shaft; and

a first drive circuit means for periodically energizing the first drive means.

4,585,978

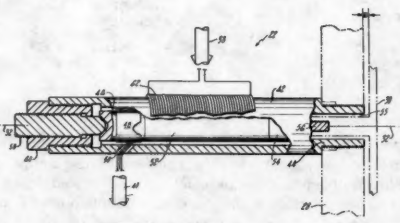
MAGNETOSTRICTIVE ACTUATOR WITH FEEDBACK COMPENSATION

Earl D. Hasselmark, Winsted; James P. Waters, Ellington, and George R. Wisner, Deep River, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 4, 1984, Ser. No. 678,141

Int. Cl.[4] H02N *2/00*

U.S. Cl. 318—118 **6 Claims**



1. A magnetostrictive actuator which provides linear displacement along a displacement axis thereof in dependence on the magnitude of an external command signal, comprising:

force train means having a magnetostrictive element for providing the linear displacement along the displacement

axis in proportion to a magnetic induction (B) provided therein by an applied magnetic field (H);

feedback sensing means disposed on said magnetostrictive element for providing a feedback signal indicative of the magnetic induction (B) within said magnetostrictive element;

electrical coil excitation means for providing said magnetic field to said magnetostrictive element at a magnitude in dependence on the magnitude of an actuator control signal applied thereto;

actuator control means for providing an actuator control signal to said excitation means, the magnitude of said actuator control signal being the difference of the magnitude of the external command signal and the magnitude of said feedback signal.

4,585,979

THREE-PHASE BRUSHLESS MOTOR HAVING AUXILIARY MAGNETIC POLE ON ROTOR

Satoshi Sakamoto, Tokyo, and Mitsuo Uzuka, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

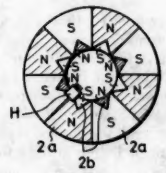
PCT No. PCT/JP83/00463, § 371 Date Sep. 12, 1984, § 102(e) Date Sep. 12, 1984, PCT Pub. No. WO84/02810, PCT Pub. Date Jul. 19, 1984

PCT Filed Dec. 28, 1983, Ser. No. 654,004

Claims priority, application Japan, Jan. 14, 1983, 58-4517

Int. Cl.[4] H02K *29/08*

U.S. Cl. 318—254 **7 Claims**



1. A three-phase brushless motor in which two electromagnetic transducer elements to detect a rotation position of a rotor having a plurality of magnetized areas are disposed to have a relative positional relation with an electrical angle of 120° or 240° therebetween, respective output signals from said electromagnetic transducer elements are composed to produce a composed signal having a phase difference of 120° relative to said output signals from said electromagnetic transducer elements, and said composed signal and said output signals from said electromagnetic transducer elements are used to determine a drive current which is supplied to a stator coil, characterized in that an auxiliary magnetic pole having opposite polarity to that of a main magnetic pole is provided on said rotor at a portion near and opposing to said electromagnetic transducer elements whereby a waveform of said composed signal of said output signals from said electromagnetic transducer elements is made steep at zero-cross points.

4,585,980

WINDSHIELD WIPER CONTROL

Günther Gille, Sersheim; Horst Goertler, Sachsenheim; Anton Lill, Lauffen a. Neckar; Hans Prohaska; Horst Rachner, both of Bietigheim-Bissingen, and Thomas Theurer, Pforzheim, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 23, 1983, Ser. No. 565,058

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248118

Int. Cl.[4] B60S *1/08*

U.S. Cl. 318—444 **22 Claims**

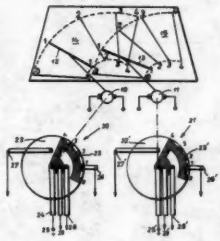
1. A windshield wiper assembly for motor vehicles comprising:

two windshield wipers:

two motors, each motor driving one of said two wipers in pendulum-fashion between a parking position and a reversing position;

each motor comprising a sensor for detecting particular angular positions of the windshield wipers; and

a control device to which the signals from each said motor



sensor are conducted, said control device providing control signals for energizing and deenergizing said motors such that in a first wiping area the motor of a first one of said wipers is continuously energized independently of the angular positions of said two wipers and only the motor of the second of said two wipers is energized and deenergized in dependence on the angular position of both wipers.

4,585,981

DEVICE FOR DRIVING MOTOR-OPERATED CLOSURE PARTS

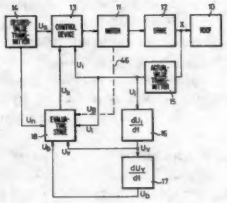
Albert Zintler, Furstenfeldbruck, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

Filed Sep. 11, 1984, Ser. No. 649,293

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1983, 3332877

Int. Cl.[4] G05B *5/01*

U.S. Cl. 318—615 **20 Claims**



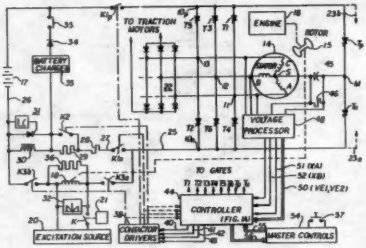
1. A device for driving a motor-operated closure part for an opening especially on a motor vehicle, having a protective circuit for interrupting a closing movement of the closure part when there is an indication that an object may be obstructing closure of the opening, wherein the protective circuit comprises a speed transmitting means for detecting a movement speed of the closure part within at least one range of a path of movement for the closure part that is critical with respect to an obstruction being encountered, and an evaluating stage that is responsive to at least one of a speed signal produced by the speed transmitting means and its rate of change with respect to time, for producing an obstruction signal that activates a control means acting to interrupt said closing movement.

4,585,982

THIRD HARMONIC AUXILIARY IMPULSE COMMUTATION INVERTER WITH MEANS FOR PRECHARGING COMMUTATION CAPACITOR

Charles E. Cooper, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Dec. 10, 1984, Ser. No. 679,980
Int. Cl.[4] H02D 5/40
U.S. Cl. 318—723 **19 Claims**



1. Means for precharging the commutation capacitor of a third harmonic auxiliary impulse commutated inverter in an electric power system comprising a pair of d-c terminals, means including an impedance that has appreciable electrical inductance for connecting said d-c terminals to a source of direct voltage the average magnitude of which normally does not exceed a predetermined amount, three a-c terminals adapted to be connected respectively to different phases of a 3-phase a-c inductive load circuit, at least three pairs of alternately conducting main controllable electric valves arranged in a 3-phase, double-way bridge configuration for interconnecting said d-c and a-c terminals, a commutation circuit including at least two auxiliary controllable electric valves interconnected in series aiding fashion between said d-c terminals and connected via a commutation capacitor to said load circuit, bistable means coupled to said capacitor for indicating whether the electrical potential on one side of the capacitor is measurably positive or negative with respect to the other side, and control means having a third harmonic commutation mode of operation in which periodic firing signals are cyclically produced, in a predetermined sequence and in synchronism with variable frequency alternating voltages developed at said a-c terminals, for causing said auxiliary valves to turn on alternately, at six times the fundamental frequency of said alternating voltages, and for turning on each of said main valves once per cycle, said control means also having a capacitor "ring-up" mode of operation which is achieved by the improvement comprising cyclically operative additional means coupled to said bistable means:

a. for initially generating a first pair of concurrent firing signals to turn on a first one of said auxiliary valves and a preselected complementary one of said main valves if said potential is relatively positive, or a second pair of concurrent firing signals to turn on the second auxiliary valve and another preselected complementary one of said main valves if said potential is negative, whereupon in either case a pulse of direct current flows from said source through a path comprising said impedance, said load circuit, and said capacitor to incrementally charge the capacitor with reverse polarity until current in said path oscillates to zero and the conducting valves consequently turn off; and

b. thereafter, in delayed response to the start of the preceding cycle of operation, for repeatedly generating said second pair of firing signals if said potential is negative and said first pair of firing signals if said potential is positive;

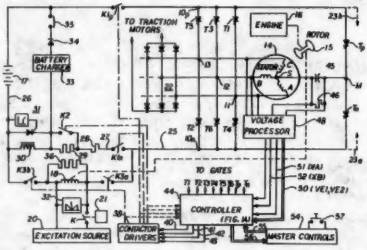
c. said ring-up mode of operation continuing for a sufficient number of cycles to enable said capacitor to charge to a voltage magnitude many times higher than said predetermined amount.

4,585,983

ELECTRIC POWER INVERTER WITH ADAPTIVE THIRD HARMONIC AUXILIARY IMPULSE COMMUTATION

Charles E. Cooper, and Thomas D. Stitt, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Dec. 10, 1984, Ser. No. 680,102
Int. Cl.[4] H02P 5/40
U.S. Cl. 318—723 **15 Claims**



1. An improved third harmonic auxiliary impulse commutated electric power inverter that is operative to supply variable frequency alternating current to the three different phases of a 3-phase inductive load circuit from a source of relatively smooth direct current, said inverter including at least three pairs of alternately conducting main controllable electric valves arranged in a 3-phase, double-way bridge configuration for interconnecting said source and said load circuit, and a commutation circuit including at least first and second auxiliary controllable electric valves interconnected in series aiding fashion across said source and connected via a precharged commutation capacitor to said load circuit, wherein the improvement comprises:

a. bistable first means coupled to said capacitor for sensing the electrical potential difference across said capacitor, said first means being in one state whenever the potential on one side of the capacitor is measurably positive with respect to the other side and being in a different state whenever said potential is measurably negative;

b. second means coupled to said 3-phase load circuit for detecting all zero crossings of the fundamental phase-to-phase alternating voltages that are developed at line terminals of the respective phases of said load circuit;

c. control means coupled to both said first and second means and having a third harmonic commutation mode of operation in which it cyclically produces a family of periodic firing signals that cause said valves to turn on selectively, said family including a first series of firing signals respectively produced in response to said second means detecting consecutive zero crossings of said phase-to-phase voltages for alternately turning on said auxiliary valves, whereupon load current can immediately transfer from an offgoing main valve to a parallel path including the turned-on auxiliary valve and said capacitor which is first discharged and then recharged with reverse polarity by such current, and said family also including a second series of firing signals respectively produced in delayed response to successive state changes of said first means for turning on said main valves in a predetermined sequence, whereupon load current can then transfer to the oncoming main valve from the turned-on auxiliary valve; and

d. said control means including time delay means effective at least after a predetermined initial period of time, which starts when said third harmonic commutation mode of operation commences, for delaying the production of each

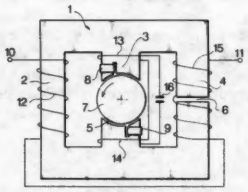
firing signal in said second series until a programmed interval of time has elapsed following each state change of said first means.

4,585,984

ALTERNATING CURRENT MOTOR

Kazuo Bessho, No. 7-10, Wakunami 2-chome, Kanazawa-shi, Ishikawa-ken, Japan

Filed Feb. 22, 1985, Ser. No. 704,271
Claims priority, application Japan, Feb. 27, 1984, 59-37015
Int. Cl.[4] H02P 5/34
U.S. Cl. 318—750 **4 Claims**



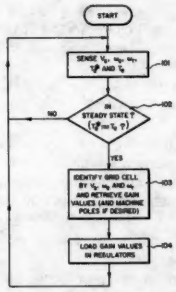
1. An alternating current motor essentially comprising:
a three-legged core including two legs as input leg and one leg as output leg, one of said two input legs being formed with a gap and each of said two input legs having a coil wound thereabout which serves as input coil, of which polarity is determined same by connecting two coils in series and of which both ends lead to input terminals,
a rotor usable for induction motor rotatably disposed in a cylindrical gap formed in the output leg, said gap having two opposed magnetizable arch-shaped concave faces,
shading coils fitted into cutouts formed on each one side of the opposed concave faces, and
a condenser for effecting resonance, said condenser being disposed in parallel relative to the coils on the input legs,
whereby said rotor can be rotated at a higher rotational speed by charging alternating voltage to said input terminals.

4,585,985

METHOD OF REAL TIME OPERATING POINT IDENTIFICATION AND POLE ADJUSTMENT FOR AN INDUCTION MOTOR DRIVE SYSTEM

Bimal K. Bose, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 9, 1984, Ser. No. 639,173
Int. Cl.[4] H02P 5/40
U.S. Cl. 318—803 **5 Claims**



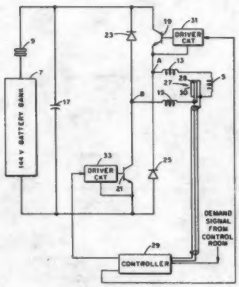
1. A method of obtaining a fast, predetermined transient response in an induction motor drive system having a control using state variable feedback through a variable regulator gain matrix, said method comprising the steps of:
determining when the induction motor of said drive system is operating in steady state;
determining selected steady state values defining an operating point;
looking up regulator gain values in a look-up table addressed by said selected steady state values, said look-up table containing regulator gain values at each distinct operating point to fix the locations of the drive system poles to achieve the desired transient response at each operating point; and
loading said gain values in the corresponding regulators.

4,585,986

DC SWITCHING REGULATED POWER SUPPLY FOR DRIVING AN INDUCTIVE LOAD

George R. Dyer, Norris, Tenn., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Nov. 29, 1983, Ser. No. 555,915
Int. Cl.[4] G05F 1/563
U.S. Cl. 323—271 **5 Claims**



1. A switching regulated DC power supply for regulating the direct current to an inductive load, comprising:
a dc power source;
an inductive load;
a bridge circuit including first and second input terminals connected respectively to opposite polarity terminals of said power source, first and second output terminals of corresponding polarity to said first and second input terminals connected across said load, a first unidirectional current conducting switching means forming a first leg of said bridge circuit for conducting current from said first input terminal to said first output terminal in response to a first control signal applied to a control input thereof, a second unidirectional current conducting switching means forming a second leg of said bridge circuit for conducting current from said second output terminal to said second input terminal in response to a second control signal applied to a control input thereof, a first diode device connected between said first input terminal and said second output terminal to allow load current to flow therethrough when said second switching means is switched off and a second diode device connected between said second input terminal and said first output terminal to allow load current to flow therethrough when said first switching means is switched off so that when both of said first and second switching means are switched on current flows from said source to said load when said first and second switching means are switched off current flows from said load to said source;
means for sensing the direct current flowing through said

load and generating a load signal proportional thereto; and

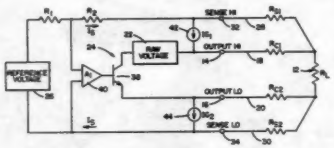
a servo control means responsive to the difference between said load signal and a demand reference signal proportional to a selected current level for generating and applying said first and second control signals to said first and second switching means, respectively, to switch said first and second switching means on allowing current to be supplied to said load until said load signal is substantially equal to said demand reference signal, to switch said first switching means on and off at a selected rate to maintain said load current at said selected level and switching said first and second switching means off to reduce the current level to said load when said demand reference signal is substantially less than said load signal allowing power to flow from said load into said source until said load signal is substantially equal to said demand reference signal.

4,585,987

REGULATED VOLTAGE SUPPLY WITH SENSE CURRENT CANCELLATION CIRCUIT

Walter W. Prue, Jr., Bothel, and Larry E. Eccleston, Edmonds, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Aug. 12, 1983, Ser. No. 522,834
Int. Cl.[4] G05F *1/62*
U.S. Cl. 323—275 **9 Claims**



1. A regulated voltage supply comprising:

a. regulator means in operative communication with a load for controlling output voltage across said load;

b. sense lead means connected between said load and said regulator means for sensing the magnitude of said output voltage and, in response, controlling said regulator means, a sense current flow in said sense lead means inducing a voltage drop in said sense lead means, tending to create an output voltage magnitude error; and

c. current means for generating a compensating current through said sense lead means, said compensating current being substantially equal in magnitude and opposite in direction to said sense current to reduce said output voltage magnitude error.

4,585,988

SWITCHING REGULATOR

Hideyuki Nakai, Higashiosaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 19, 1983, Ser. No. 515,114
Claims priority, application Japan, Jul. 19, 1982, 57-126462
Int. Cl.[4] G05F *1/56*
U.S. Cl. 323—285 **10 Claims**

1. A switching regulator for switching an input voltage obtained by rectifying and smoothing of alternating-current power for providing a constant direct-current output voltage, comprising:

a transformer having at least a primary input winding and a feedback winding electromagnetically coupled to said input winding;

a switching transistor having a collector-emitter path and a base for switching said input voltage applied thereto for providing a switching output of said input voltage;

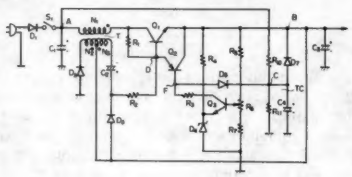
said input winding and said collector-emitter path of said switching transistor being connected in series between said input voltage and an output node;

said base of said switching transistor being operatively connected to one end of said feedback winding of said transformer for applying a base current to said base for periodically turning ON/OFF said switching transistor;

a smoothing capacitor connected to said output node for smoothing said switching output for providing said direct-current output voltage;

by-passing means operatively connected to said base of said switching transistor for by-passing the base current of said switching transistor for controlling an ON period of said switching transistor;

first means receiving said direct-current output voltage obtained by said smoothing capacitor for providing said by-passing means in response to said direct-current output voltage with a first control voltage for controlling said by-passing means so that in a stationary state of said switching regulator said direct-current output voltage is maintained at a predetermined constant value;



second means having a time-constant circuit for applying to said by-passing means a second control voltage being lower than said direct-current output voltage during a transitional period immediately after application of said input voltage to control said by-passing means so that said ON period of said switching transistor is shortened during said transitional period; and

input sensing means having a dividing resistor, one end of which is connected to the input side of said primary input winding, for sensing said input voltage and applying to said time-constant circuit the sensed input voltage on the dividing point of said dividing resistor, and

said second means providing said by-passing means in response to said sensed input voltage with a third control voltage being proportional to said input voltage and lower than said predetermined constant value of said direct-current output voltage when said input voltage decreases below the range of voltage regulation in said stationary state so that said switching transistor is ON-OFF controlled in response to said input voltage.

4,585,989

50% POINT OF AMPLITUDE AND PHASE DETECTOR

Earl G. Matney, Newberg, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

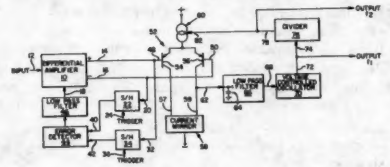
Filed May 18, 1984, Ser. No. 611,798
Int. Cl.[4] G01R *25/02*
U.S. Cl. 324—83 D **13 Claims**

1. A system for detecting the point at which a periodic signal is at 50% of its maximum amplitude, comprising:

(a) differential amplifier means for producing, in response to said periodic signal, inverted and non-inverted output signals representative thereof, said differential amplifier means having a bias input for adjusting the relative positions of said output signals;

(b) phase detector means, responsive to said output signals, for determining when the downward transition of one said output signal crosses the upward transition of the other said output signal; and

(c) error correction means for providing to said bias input an error signal representative of the difference between the



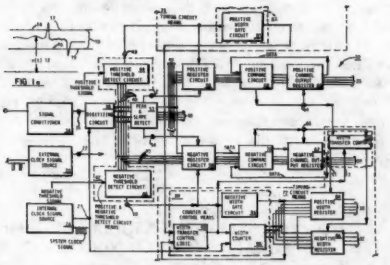
position of said inverted output signal and the position of said non-inverted output signal.

4,585,990

LARGEST AMPLITUDE TRANSIENT DETECTOR

Hugh J. Murphy, Riverside, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 11, 1984, Ser. No. 599,406
Int. Cl.[4] G01R *27/28*
U.S. Cl. 324—102 **6 Claims**



1. A transient detector system for monitoring a voltage signal to detect positive and negative transient voltages on said voltage signal, that penetrate a predetermined threshold band, said transient detector system receiving an external clock signal for synchronization with an external system from an external clock signal source at an external clock signal terminal, said transient detector system providing first and second output signals on output signal busses characterizing the amplitude of the last largest respective positive and negative transient noise signal amplitudes penetrating said threshold band, said transient detector system also providing third and fourth output signals on a positive width bus and on a negative width bus, said output signals respectively characterizing the pulse width of said last largest positive and negative transient noise signals, the transient detector system comprising;

an internal clock signal source for providing a system clock signal;

a signal conditioning circuit for scaling and for conditioning said voltage signal and for providing a sample signal at a sample signal terminal, and;

a digitizing circuit responsive to said system clock signal source for sampling and periodically digitizing the magnitude of said sample signal and for periodically providing a digital data signal on a data bus, each respective data signal representing the instantaneous amplitude of said sample signal, the sample rate of said digitizing circuit being characterized to be of a sufficiently high repetition rate to substantially follow the amplitude of positive and negative transient noise signals present on said sample signal;

positive and negative threshold detect circuit means responsive to said series of data amplitude signals on said data bus and to positive and negative threshold signals respectively for providing a positive threshold penetration logic signal as a positive transient voltage signal penetrates a predetermined positive threshold signal level, and for providing a negative threshold penetration logic signal as a negative transient voltage signal penetrates a predetermined negative threshold signal level,

a slope detect circuit means responsive to said data amplitude signal for determining if said data amplitude signal is changing with a positive or negative slope with respect to time and for providing

a positive channel peak transient logic signal at a positive channel peak transient select terminal for a positive data amplitude bus signal changing from a positive slope to a negative slope, and

a negative channel peak transient logic signal at a negative channel peak transient select terminal for a negative data amplitude signal changing from a negative slope to a positive slope;

a positive register means coupled to data amplitude bus and responsive to said positive threshold penetration logic signal and to said positive channel peak transient logic signal for loading and storing peak values of successive positive transient signals from said data amplitude signals on said data bus, and

a negative register means coupled to said data bus and responsive to said negative threshold penetration logic signal and to said negative channel peak transient logic signal for loading and storing peak values of successive negative transient signals from said data amplitude signals on said data bus;

positive channel output register storage means for storing the peak amplitude of said last largest positive transient data signals;

a negative channel output register storage means for storing the peak amplitude of said last largest negative transient data signals;

a positive compare circuit means coupled to said positive register and to said positive channel output register storage means for comparing the peak value of successive positive transient signals with said last largest positive transient signal and for replacing the contents of said positive channel output register with the contents of said positive channel register when the peak value of the contents of said positive register exceeds the value of the contents of said positive channel output register and for providing a positive channel width transfer control signal to signal that the value of said positive transient signal exceeds the value of said last largest positive transient signal, and

a negative compare circuit means coupled to said negative register and to said negative channel output register storage means for comparing the peak value of successive negative transient signals with said last largest negative transient signal and for replacing the contents of said negative channel output register with the contents of said negative channel register when the peak negative value of said negative channel register exceeds the value of said negative channel output register and for providing a negative channel width transfer control signal to signal that the value of said negative transient signal exceeds the value of said last largest negative transient signal;

timing circuit means responsive to said positive threshold penetration logic signal and to said negative threshold penetration logic signal and to said system clock signal for measuring the width of each successive positive and negative transient noise signal penetration of said predetermined threshold band and for outputting said third and fourth output signals in response to said positive and negative channel width transfer control signals;

whereby, said transient detector system positive and negative channel output registers respectively contain the values of the amplitudes of said last largest positive and negative transient signals, and said positive and negative transient noise signal width registers respectively contain

the respective widths of said largest last positive and negative transient signals.

4,585,991

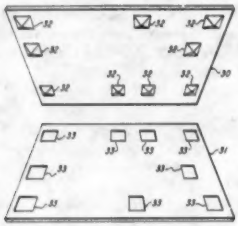
SOLID STATE MULTIPROBE TESTING APPARATUS

Lee R. Reid, Plano, and Tommy D. Cody, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 384,453, Jun. 3, 1982, abandoned. This application Mar. 13, 1985, Ser. No. 710,959

Int. Cl.[4] G01R *31/26, 1/04*

U.S. Cl. 324—158 P **39 Claims**



1. A testing socket for electrical testing of devices, each having a substantially planar surface with an array of conductive pads disposed thereon comprising:

(a) a holder for holding a said device in a fixed position;

(b) a probe for contacting said device pads, said probe including a substantially planar semiconductor substrate with electrically conductive semiconductor projections integral with said substrate and disposed in an array corresponding to a mirror image of said array of pads; and

(c) circuit means connected to said projections for testing of said device when said probe projections contact said pads.

4,585,992

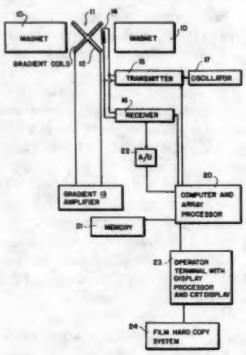
NMR IMAGING METHODS

Andrew A. Maudsley, Woburn, Mass.; Sadek K. Hilal, New York, N.Y., and Howard E. Simon, Monroe, Conn., assignors to Philips Medical Systems, Inc., Shelton, Conn.

Filed Feb. 3, 1984, Ser. No. 576,851

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—309 **18 Claims**



1. A method for producing an image representative of nuclear spin density data, employing nuclear magnetic resonance performed by a species of nuclei in a test object to be sampled, comprising the steps of:

(a) placement of a phantom object containing NMR-observable nuclei in a constant magnetic field oriented in a direction parallel to a first axis;

(b) application of a radiofrequency excitation pulse to excite spins of said nuclei in said phantom object;

(c) application of first and second linear magnetic field gradients along mutually orthogonal second and third axes lying in a first plane passing through said phamtom object, during which application the spins of said nuclei evolve;

(d) application of a refocusing pulse to produce a spin echo;

(e) detection of said spin echo in the absence of said first and second magnetic field gradients;

(f) conversion of said spin echo into a first set of electrical signals;

(g) repetition of steps (b)–(f) wherein the amplitudes of said first and second magnetic field gradients are successively varied for each application, thereby producing a multiplicity of sets of electrical signals;

(h) processing of said electrical signals to obtain a correction data set reflecting the deviation of said constant magnetic field from homogeneity in said first plane;

(i) storage of said data correction set in the memory of a computer;

(j) storage of a nuclear spectral data set in said computer, said nuclear spectral data set being the result of placing a test object in said constant magnetic field, performing steps (b)–(g), and processing the resulting electrical signals, said nuclear spectral data set reflecting the spin density of said nuclei in said test object in said first plane; and

(k) performance of a correction procedure whereby the values represented in said nuclear spectral data set are adjusted for each point in said first plane by the amounts specified by the corresponding values in said correction data set, thereby correcting said nuclear spectral data set to account for the inhomogeneity of said constant magnetic field.

4,585,993

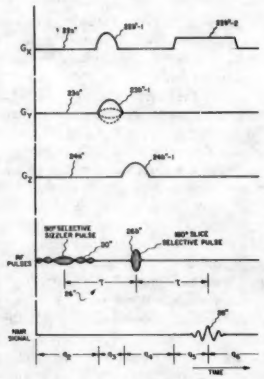
METHOD FOR SELECTIVE NMR IMAGING OF CHEMICALLY-SHIFTED NUCLEI

Paul A. Bottomley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,381

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—309 **58 Claims**



1. A method for NMR imaging with selected nuclei of a sample also containing undesired nuclei of the same species and having chemically-shifted NMR frequencies, and comprising the steps of:

(a) irradiating the sample with a pulsed RF magnetic field having a carrier frequency essentially at the chemically-

shifted NMR frequency of the undesired, non-selected nuclei;

(b) selecting a pulse width to substantially confine the frequency spectrum of the pulsed irradiating RF magnetic field of step (a) substantially to a narrow band of frequencies selected to lie about the chemically-shifted NMR frequency of the non-selected nuclei and to essentially exclude NMR frequencies of the selected nuclei;

(c) applying to the sample an NMR imaging signal sequence selected to evoke NMR response signals from the selected nuclei;

(d) adjusting the amplitude of the irradiating RF field of step (a) to saturate the non-selected nuclei and prevent the non-selected nuclei from producing NMR signals as part of the NMR response signals responsive to the NMR imaging sequence of step (c); and

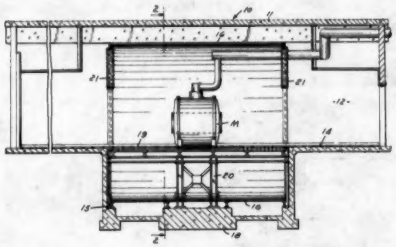
(e) processing the resulting NMR response signals, received from the sample responsive to the imaging signal sequence of step (c), to provide an image of the distribution of the selected nuclei in the sample and substantially devoid of contribution by the undesired nuclei.

4,585,994

NUCLEAR MAGNETIC RESONANCE IMAGING SYSTEM

James R. Ewing, Detroit, Mich., assignor to Henry Ford Hospital, Detroit, Mich.

Filed Jul. 15, 1983, Ser. No. 514,169
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—318 **11 Claims**



1. A nuclear magnetic resonance imaging system for placement in a building comprising

a high field solenoid magnet providing a uniform static magnetic field,

said solenoid having both ends open defining an opening into which a human subject can be positioned,

an RF coil surrounding the subject,

a receiver coil surrounding the subject, and

a substantially continuous cylindrical shell of magnetic material surrounding the magnet and the RF and receiver coils,

said shell having a radius such that the wall thereof lies in the area of the field of the magnet where permeability is substantially at a maximum for the imposed field,

said shell having a radius substantially greater than the diameter of the magnet,

said shell having a length substantially greater than the length of the magnet,

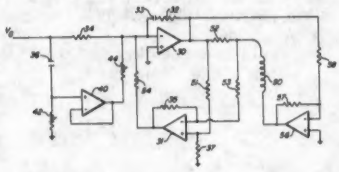
such that the shell functions to substantially confine the field of the magnet to an area about the shell, the environment is not adversely affected and no additional protection is required surrounding the system.

4,585,995

NUCLEAR MAGNETIC RESONANCE EDDY FIELD SUPPRESSION APPARATUS

David C. Flugan, Hudson, Ohio, assignor to Technicare Corporation, Solon, Ohio

Filed Apr. 19, 1984, Ser. No. 601,897
Int. Cl.[4] G01R *33/22*
U.S. Cl. 324—322 **14 Claims**



1. In a nuclear magnetic resonance imaging system, including a magnet for developing a main magnetic field, field gradient apparatus comprising:

a gradient coil for applying a gradient to said main magnetic field; and

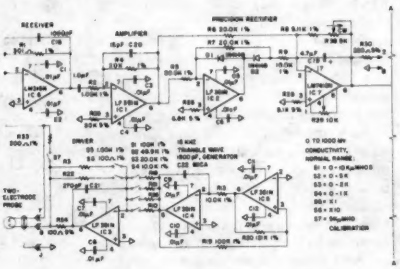
means, coupled to said gradient coil, for energizing said coil, including means for applying a first current component to produce a desired stabilized field gradient, and means for applying a second current component substantially during the switching time of said first current component to compensate for the effect of an eddy field in said main magnetic field.

4,585,996

INSTRUMENT FOR MEASURING ELECTRICAL CONDUCTIVITY OF A LIQUID

Robert S. Luce, Los Altos, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed May 27, 1983, Ser. No. 498,978
Int. Cl.[4] G01N *27/02*
U.S. Cl. 324—442 **5 Claims**



1. An instrument for measuring electrical conductivity of a liquid, said instrument comprising:

(a) a first electrode and a second electrode, each of said first and second electrodes being immersible in said liquid;

(b) means for impressing an input voltage signal having a triangular waveform on said first electrode, said triangular waveform having a substantially constant rate of voltage change through periodic changes in polarity of said input voltage signal, said input voltage signal integrating substantially to zero over each cycle of said triangular waveform, said input voltage signal having sufficient amplitude to drive an alternating electrical current through said liquid to said second electrode when said first and second electrodes are immersed in said liquid;

(c) means for detecting said alternating electrical current at said second electrode, and for converting said current detected at said second electrode to an output voltage signal; and

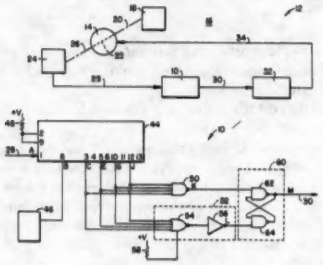
(d) means for processing said output voltage signal to obtain a signal indicative of electrical conductivity of said liquid.

4,585,997

METHOD AND APPARATUS FOR BLANKING NOISE PRESENT IN AN ALTERNATING ELECTRICAL SIGNAL

Frank W. Lin, Los Altos, Calif., assignor to TeleVideo Systems, Inc., San Jose, Calif.

Filed Dec. 8, 1983, Ser. No. 559,526
Int. Cl.[4] H03M *13/00*
U.S. Cl. 328—165 **20 Claims**



1. A method for blanking noise present in an alternating electrical signal correlated to movement of a positionable element in an automated positioning system, comprising the steps of:

inputting the alternating electrical signal to a first input of a shift register means having a plurality of outputs;

inputting clock signals having a preselected frequency to a second input of the shift register means for digitally sampling the alternating electrical signal at the times of occurrence of the clock signals so as to produce digital samples shiftably stored in respective storage locations of the shift register means connected to the plurality of outputs of the shift register means;

inputting the digital samples appearing at predetermined ones of the plurality of outputs of the shift register means to a logic circuit means for producing a first logic state as an output signal, when a first logic state appears at the predetermined ones of the plurality of outputs of the shift register means, and a second logic state as the output signal, when a second logic state appears at the predetermined ones of the plurality of outputs of the shift register means; and

outputting the output signal produced by the logic circuit means as an outgoing alternating electrical control signal correlated to movement of the positionable element;

whereby the noise does not appear in the outgoing alternating electrical control signal.

4,585,998

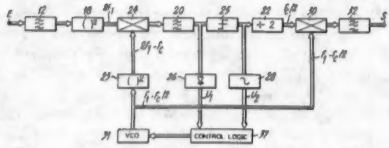
METHOD AND DEVICE FOR COHERENT DEMODULATION OF A DIGITALLY MODULATED CARRIER

Jacques Veillard, Saint Gregoire, France, assignor to Etablissement Public de Telediffusion dit, Montrouge, France

Filed Sep. 18, 1984, Ser. No. 651,843
Claims priority, application France, Sep. 21, 1983, 83 15019
Int. Cl.[4] H04L *27/14, 27/22*
U.S. Cl. 329—50 **10 Claims**

1. A method of coherent demodulation of a digitally modulated carrier modulated by phase shift keying or frequency shift keying with phase continuity, said carrier being transmitted as useful bursts distributed at equal time intervals with phase continuity from each burst to the next burst, said process including the steps of recovering the frequency of said carrier by squaring said carrier for obtaining a spectrum and selecting the carrier frequency within said spectrum,

wherein an acquisition burst having the same frequency as said carrier, having a time duration longer than the time duration of said useful bursts and having characteristic features which are particular to said acquisition burst, is



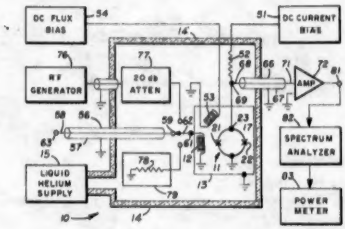
also sent at times which are separated by time periods having a duration which is longer than the repetition period of the useful bursts by at least an order of magnitude, wherein said acquisition burst is received along with the useful bursts, is squared to provide an acquisition spectrum and a frequency which is double that of the carrier frequency is selected within an acquisition period by identifying said characteristic features of the acquisition burst.

4,585,999

RADIOFREQUENCY AMPLIFIER BASED ON A DC SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE

Claude Hilbert; John M. Martinis, and John Clarke, all of Berkeley, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 27, 1984, Ser. No. 604,547
Int. Cl.[4] H03F *19/00*
U.S. Cl. 330—61 R **9 Claims**



6. A method of amplifying a radiofrequency signal comprising:

disposing a single symmetrically biased dc SQUID and an input coil within a superconducting shield, said dc SQUID having a superconducting ring interrupted by two shunted Josephson junctions, and said input coil being inductively coupled solely to said ring of said single SQUID,

establishing a constant magnetic flux threading said SQUID ring,

applying said radiofrequency signal to said input coil from outside of said superconducting shield,

obtaining an amplified radiofrequency signal solely from across said ring of said single SQUID,

transmitting said amplified radiofrequency signal from

across said SQUID ring to the outside of said superconducting shield.

4,586,000

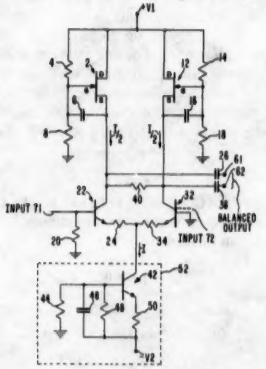
TRANSFORMERLESS CURRENT BALANCED AMPLIFIER

Gary L. Wagner, Menlo Park, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 347,744, Feb. 10, 1982, abandoned. This application Jun. 15, 1984, Ser. No. 621,014

Int. Cl.⁴ H03F *3/45, 3/16*

U.S. Cl. 330—252 **1 Claim**



1. A transformerless current balanced linear amplifier for amplifying input signals, said amplifier operable over a wide a.c. frequency range of input signals and comprising:

first and second amplifying transistors connected as a differential pair, each transistor having a base, a collector, and an emitter, with at least one of said transistors having an input signal applied to its base;

first and second output terminals having a current balanced output therebetween, the collector of the first transistor being a.c. coupled to the first output terminal and the collector of the second transistor being a.c. coupled to the second output terminal;

a first self-biasing constant current source coupled to the collector of the first transistor; and

a second self-biasing constant current source coupled to the collector of the second transistor;

wherein each self-biasing constant current source comprises a field effect transistor having a gate, a source, and a drain; and

a capacitor connects together the gate and the source of each field effect transistor, whereby each self-biasing constant current source produces a fixed amount of current across the a.c. input signal frequency range of the amplifier, but acts as a constant voltage source for d.c. input signals.

4,586,001

LOW VOLTAGE PUSH-PULL AMPLIFIER

Michael R. Pye, Winchester, England, assignor to Sinclair Research Ltd., Hampshire, England

Filed Apr. 3, 1984, Ser. No. 596,353

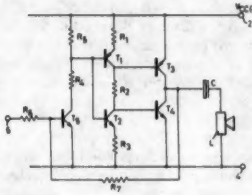
Claims priority, application United Kingdom, Apr. 22, 1983, 8311072

Int. Cl.⁴ H03F *3/26, 3/18*

U.S. Cl. 330—267 **28 Claims**

1. A complementary push-pull amplifier comprising: a series connection between the power supply rails of first, second and third resistors, the first resistor being connected to the second resistor through the emitter and collector of a first transistor, the second resistor being connected to the third resistor through the emitter and collector of a second transistor, the bases of the first and second transistors being connected together to receive an input signal for amplification;

a pair of complementary transistors connected in series



between the power supply rails with the respective bases receiving signals from opposite ends of the second resistor and the respective collectors being connected together at the junction between said complementary transistors; and

means for providing an amplified output from said junction of said complementary transistors.

4,586,002

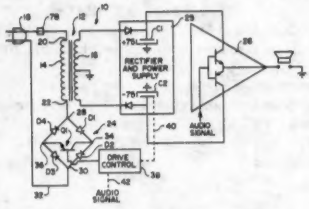
AUDIO AMPLIFYING APPARATUS AND METHOD

Robert W. Carver, 330 Ave. A, Snohomish, Wash. 98290

Continuation-in-part of Ser. No. 413,876, Sep. 1, 1982, Pat. No. 4,484,150, which is a continuation of Ser. No. 261,238, filed as PCT US79/00952, Nov. 11, 1979, published as WO80/01023, May 15, 1980, § 102(e) date Jun. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,471, Apr. 5, 1979, abandoned, and Ser. No. 958,141, Nov. 6, 1978, Pat. No. 4,218,660. This application Jun. 1, 1984, Ser. No. 616,398

Int. Cl.⁴ H03F *3/30*

U.S. Cl. 330—297 **20 Claims**



1. An apparatus for amplifying an audio signal having an amplitude which varies at an audio frequency, said apparatus comprising:

a. audio amplifier means for amplifying audio frequency amplitude variations of the audio signal to produce an output signal corresponding to the audio signal, said amplifier means including an audio signal receiving means for receiving the audio signal and a power receiving means characterized in that said power receiving means requires a power input of a predetermined voltage level for proper operation of the audio amplifier means;

b. power supply means for supplying power to the amplifier means, said power supply means adapted to be connected with a source of commercially available, sinusoidally varying supply voltage having a constant frequency within the audio range, said power supply means comprising a transformer having a primary winding and a secondary winding, said secondary winding being operatively connected to the power receiving means of the amplifier means, said primary winding being adapted to be connected to said source, where half cycles of said sinusoidal

supply voltage having a first lower voltage portion at a beginning portion of the voltage sine wave half cycle, a second higher voltage portion during a middle portion of said sine wave half cycle, and a third lower voltage portion at an ending portion of the sine wave half cycle, said power supply means being characterized in that said transformer is so arranged, relative to the amplifying means, that with current flowing in the primary and with voltage imposed on the primary during the middle portion of the half cycle, voltage is developed in the secondary winding in excess of the predetermined voltage level required to cause proper operation of the amplifying means;

c. power control means to cause variable amounts of electrical energy to be transmitted to the primary winding of the transformer to induce corresponding variable electrical energy in the secondary winding, said power control means including switch means connected between said source and said primary winding for operating in a conductive state in response to a control signal for a selected power transmitting portion of said half cycles, to cause the voltage during the power transmitting portion to be applied across the primary winding only when the switch means is in the conductive state;

d. control signal generating means to cause said switch means to be conductive for said power transmitting period during the middle portion of the half cycle, and nonconductive during at least substantial portions of the beginning and ending portions of the half cycle, said control means being such that for higher power requirements of the amplifying means, duration and location of the power transmitting period during which the switch means is conductive are such to deliver greater electrical energy through the transformer to the amplifying means, and for lower power requirements of the amplifying means the duration and location of the power transmitting period are such to deliver lower electrical energy through the transformer to the amplifying means.

4,586,003

ON-OFF RAPIDLY SWITCHABLE AMPLIFIER CIRCUIT WITH D-C FEEDBACK

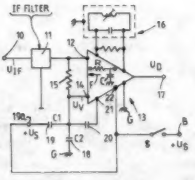
Heribert Gorzel, and Wolfgang Liess, both of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 4, 1985, Ser. No. 697,737

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3404719

Int. Cl.[4] H03F *1/00*

U.S. Cl. 330—297 **4 Claims**



1. Rapidly power-ON switchable electrical circuit (13), particularly for repeated ON/OFF switching between ON and OFF connection of a power supply to the circuit, having

a signal input terminal (12) receiving a signal (U_{IF}) to be processed;

an internal d-c feedback circuit (R/C) to stabilize the operating point (U_V) of the circuit (13);

interruptable power supply means (U_S, G, S) connected for supplying operating voltage to the circuit adapted to be repeatedly switched ON and OFF,

and comprising

a circuit arrangement to rapidly determine the operating point of the electrical circuit (13) and reduce the time of transient operation of the circuit upon having power connected thereto when the power supply means is switched ON, including

an additional terminal (14) coupled to the feedback circuit and hence to the signal thereat representative of the operating point (U_V) of the circuit; and

an additional auxiliary power supply coupled to the additional terminal, said additional auxiliary power supply comprising

a capacitor network (18, 19) having a series capacitor (19, C1) serially connected between the additional terminal (14) and a power terminal of the power supply means, and a shunt capacitor (18, C2) connected between the additional terminal (14) and a ground or chassis terminal of the power supply means, and wherein the relationship between the capacity value of the series capacitor and the capacity value of the shunt capacitor is selected with respect to the voltage of the power supply means (U_S-G) to apply instanteously, upon connection of the power supply means, to said additional terminal a voltage corresponding substantially to the operating point (U_V).

4,586,004

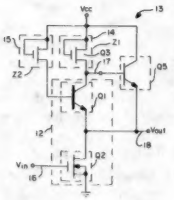
LOGIC AND AMPLIFIER CELLS

Frank A. Valdez, San Mateo, Calif., assignor to Saber Technology Corp., San Jose, Calif.

Filed Jun. 27, 1983, Ser. No. 508,310

Int. Cl.[4] H03F *3/16*

U.S. Cl. 330—300 **20 Claims**



1. A high-speed circuit having a circuit input and a circuit output comprising,

a first device including a high-speed transistor having an input region, an output region forming the circuit output and a control region, said first device having a high gain-bandwidth product,

biasing means connected to said control region for controlling the operating point of said first device in a mode whereby Miller-effect capacitance is minimized,

a second device including a unipolar transistor having a gate forming the circuit input, a source and a drain, said second device having a high gain-bandwidth product, said drain connected to the input region of said first device, said gate adapted to receive an input signal for controlling the drain current and thereby the current supplied to the input region of said first device whereby the output signal from the output region of said first device is controlled at high speed.

4,586,005

ENHANCED ANALOG PHASE INTERPOLATION FOR FRACTIONAL-N FREQUENCY SYNTHESIS

James A. Crawford, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 16, 1985, Ser. No. 756,148

Int. Cl.[4] H03L *7/06*

U.S. Cl. 331—1 A **19 Claims**

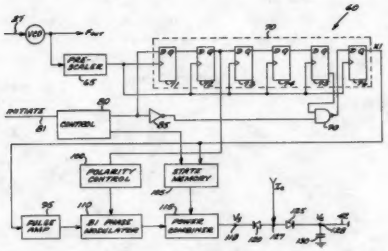
14. An improved analog phase interpolator in a Fractional-N

frequency synthesizer for enabling high reference signal frequencies while providing good spurious signal performance, comprising:

a clock signal generator means responsive to the synthesizer output signal for providing a clock signal with a clock frequency which is an integral submultiple of the frequency of said output signal;

an initiate means responsive to said reference signal for providing an initiate pulse once during each cycle of said reference signal;

a digital pulse generator clocked by said clock signal and responsive to said initiate signal to provide a first pulse signal in response to said initiate signal and a second pulse



signal whose leading edge lags the leading edge of said first pulse signal by a predetermined number of clock cycles;

current source means for providing a precision correction current signal;

integrator means for selectively integrating said correction current signal in response to a gating signal for providing a phase correction signal; and

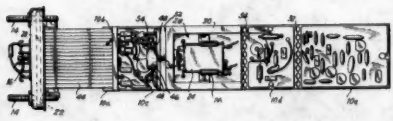
a gating signal circuit responsive to said first and second pulse signals to provide a gating signal whose waveform defines a gating time interval whose duration is equivalent to the time duration of said predetermined number of clock cycles.

4,586,006

CRYSTAL OSCILLATOR ASSEMBLY

Donald A. Emmons, Carlisle, Mass., assignor to Frequency and Time Systems, Inc., Beverly, Mass.

Filed Jun. 25, 1984, Ser. No. 624,392
Int. Cl.[4] H03B 1/00
U.S. Cl. 331—69 **15 Claims**



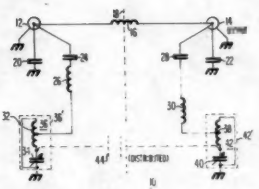
1. An assembly for a quartz crystal oscillator comprising a plurality of circuit components forming an electrical circuit for said quartz crystal, an oven in which heat is generated and in which said quartz crystal is carried, said plurality of components mounted on circuit board means, said electrical circuit for said oven comprising a thermistor, an improvement comprising said oven comprising a six-sided rectangular box, said circuit board means forming a plurality of sides of said oven enclosing said crystal oscillator, said electrical circuit comprising a control transistor, said control transistor having its heat-sink surface being directly mounted against one surface of said oven to heat said oven with the heat generated by said control transistor, said control transistor comprising leads soldered to a portion of said circuit board forming another surface of said oven perpendicular to said surface to which said control transistor is mounted.

4,586,007

NOTCH FILTER

Andrew Ciszek, Maple Shade, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 22, 1984, Ser. No. 663,194
Int. Cl.[4] H03H 7/01
U.S. Cl. 333—175 **9 Claims**



1. A notch filter comprising in combination:

an input terminal;

an output terminal;

means inductively coupling said input terminal to said output terminal forming a relatively low impedance circuit therebetween;

first and second relatively high impedance energy storage resonant tank circuits;

first means capacitively coupling said first energy storage resonant tank circuit to said input terminal providing direct current (dc) blocking therebetween, said first means also including means for providing impedance matching therebetween;

second means capacitively coupling said second energy storage resonant tank circuit to said output terminal for providing dc blocking therebetween, said second means also including means for providing impedance matching therebetween; and

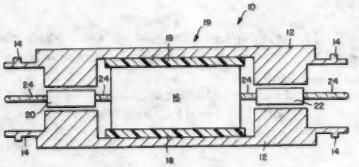
means coupling said first and second tank circuits together to provide phase cancellation therebetween.

4,586,008

FAST PASSIVE COAXIAL INTEGRATOR

Michael Raleigh, 8491 Imperial Dr., Laurel, Md. 20708

Filed Nov. 9, 1983, Ser. No. 550,091
Int. Cl.[4] H03H 1/02
U.S. Cl. 333—19 **18 Claims**



1. A fast passive integrator for integrating an input signal having a fast risetime, comprising:

an outer conductor;

an inner conductor closely fitted coaxially in said outer conductor;

a first resistive element disposed at one end of said inner conductor and a second resistive element disposed at the other end of said inner conductor, said resistive elements being coaxial with said outer conductor; and

a center conductor also coaxial with said outer conductor and electrically coupling said first resistive element to said

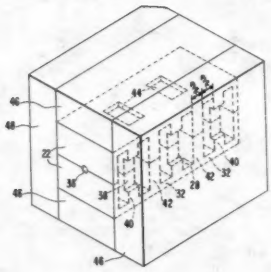
inner conductor and said inner conductor to said second resistive element.

4,586,009

DOUBLE STAGGERED LADDER CIRCUIT

Bertram G. James, Redwood City, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 9, 1985, Ser. No. 763,935
Int. Cl.[4] H01P *9/00;* **H01J** *25/36*
U.S. Cl. 333—156 **3 Claims**



1. A slow-wave circuit for a traveling wave tube comprising:

a pair of combs, each comb formed as a unitary metallic piece comprising a backing element extending in an axial direction and a series of flat, generally rectangular teeth periodically spaced in said axial direction and extending from said backing member with their flat sides perpendicular to said axial direction, said teeth having axially aligned grooves in the ends removed from said backing member;

said pair of combs being juxtaposed such that said teeth align axially to form ladder rungs and said grooves join perpendicularly to said axis to form an axial passageway for an electron beam;

a first alternating set of said rungs having grooves in both sides of said rungs;

a set of holes extending through each of said backing elements, each hole connecting with the spaces on both sides of a rung of a second set alternating with said first set, and flat plates affixed to cover the open sides and backing members of said combs;

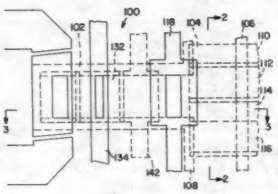
whereby each cavity formed between adjacent rungs is coupled on two opposite sides to the preceding cavity and on the remaining two sides to the following cavity.

4,586,010

CHARGE SPLITTING SAMPLER SYSTEMS

Thomas E. Linnenbrink, Wilmette, Ill., assignor to Q-Dot, Inc., Colorado Springs, Colo.

Filed Sep. 30, 1982, Ser. No. 431,012
Int. Cl.[4] H03H *15/02;* **G11C** *27/00*
U.S. Cl. 333—165 **12 Claims**



1. A method for splitting a packet of charge carriers into a plurality of at least two packets as a function of an applied signal potential, comprising the steps of

establishing a charge packet storage well in a semiconductive charge transfer zone and providing a predetermined quantity of charge carriers in said well,

establishing a plurality of substantially empty charge collection potential wells in said semiconductive charge transfer zone adjacent said charge packet storage well, the potentials of said charge collection potential wells being insufficient to permit transfer of said charge carriers from said storage well to said collection wells, the potential of at least one of said collection wells being varied in response to said signal potential,

abruptly raising the potential of said storage well above the potential of said collections wells such that substantially all of said charge carriers are distributed from said storage well into said collection wells as a function of the potential differences among the collection wells at the time of raising the storage well potential, and

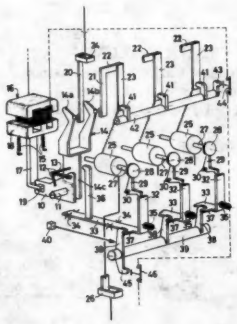
measuring the quantity of charge in at least one of said collection wells.

4,586,011

CURRENT-LIMITER ELECTRIC SWITCH HAVING A TELECONTROL SUITABLE FOR A VERY HIGH NUMBER OF SWITCHING OPERATIONS

Angelo Mostosi, Bergamo, Italy, assignor to SACE S.p.A. Costruzioni Elettromeccaniche, Bergamo, Italy

Filed Jul. 9, 1984, Ser. No. 629,081
Claims priority, application Italy, Jul. 27, 1983, 22511/83[U]
Int. Cl.[4] H01H *75/00, 77/00, 83/00*
U.S. Cl. 335—6 **15 Claims**



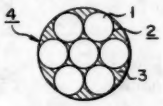
1. A current-limiter switch comprising fixed and movable contacts adapted to move between open and closed positions, a movable carrier, means for mounting said movable contacts for movement relative to said movable carrier, a solenoid for moving said movable carrier through its associated armature and thereby moving the movable contacts thereof to the closed position upon energization of said solenoid, an electrical circuit for energizing said solenoid, and means for responding to a predetermined current threshold to open said electrical circuit whereby electrodynamic repulsion between said fixed and movable contacts move said movable contacts to said open position.

4,586,012

SOLDERED SUPERCONDUCTIVE COILS FOR A PULSE MAGNET

Misao Koizumi, Kawasaki, and Satoru Murase, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 16, 1984, Ser. No. 631,319
Claims priority, application Japan, Jul. 26, 1983, 58-135180
Int. Cl.[4] H01F 7/22
U.S. Cl. 335—216 3 Claims



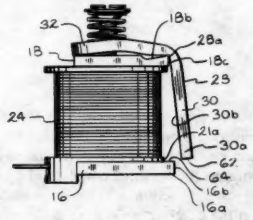
1. A superconductor for a pulsed magnet, comprising a wire assembly including a plurality of superconducting wires which are individually bonded with a solder, characterized in that said solder comprises an Sn-Pb alloy containing at least one additive metal selected from the group consisting of indium and bismuth, wherein said additive metal is contained in an amount falling within a range of 4 to 30 weight % based on a total weight of said solder.

4,586,013

PROPORTIONAL SOLENOID

Herbert L. Linkner, Jr., Dexter, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Oct. 1, 1984, Ser. No. 656,572
Int. Cl.[4] H01F 7/08
U.S. Cl. 335—276 19 Claims



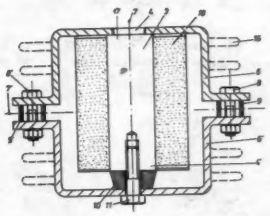
1. An electro-magnetic device comprising:
a field member having an axis;
a winding coaxially positioned around said field member;
said field member including a pole plate at one end thereof, said pole plate including a pole plate edge portion generally perpendicular to said axis and extending outwardly from said axis past said winding;
an armature pivotally mounted on the opposite end of said field member and including an armature plate extending axially toward and terminating short of said pole plate edge portion, said armature plate having an armature plate edge portion axially spaced from and generally parallel to said pole plate edge portion to define an air gap having a spacing which remains substantially uniform as said armature is pivoted relative to said field member, and means connected between said field member and said armature for biasing said armature plate edge portion away from said axis of said field member, said armature plate edge portion moveable toward said axis against the action of said biasing means upon application of a predetermined current to said winding.

4,586,014

ELECTROMAGNETIC BEAM

Gasper Reinhold, Klagenfurt, Austria, assignor to Johannes Zimmer, Klagenfurt, Austria

PCT No. PCT/AT83/00026, § 371 Date May 2, 1984, § 102(e) Date May 2, 1984, PCT Pub. No. WO84/00914, PCT Pub. Date Mar. 15, 1984
PCT Filed Aug. 26, 1983, Ser. No. 610,993
Claims priority, application Austria, Sep. 2, 1982, 3294/82
Int. Cl.[4] H01F 7/00
U.S. Cl. 335—296 9 Claims



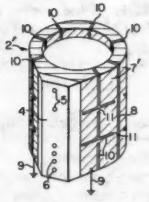
1. In a coating or printing apparatus in which a member applies a coating or printing substance to a web with a pressure generated at least in part by magnetic attraction of said member toward an electromagnetic beam, the improvement wherein thermal energy is dissipated from said beam in a blowerless construction which comprises:
a row of spaced-apart electromagnets each having a coil surrounding a pole piece, the axis of said pole pieces lying in a common plane and said pole pieces having active ends turned toward said member;
a continuous magnetically permeable connecting bridge in the form of a bar narrower than said electromagnets lying in said plane and secured to the opposite ends of said pole pieces all along said row; and
a support profile secured to said bridge, symmetrical with respect to said plane and in a heat-conducting relationship with said bridge and said pole pieces, said profile having portions flanking said electromagnets and at least one flange extending inwardly toward said bridge.

4,586,015

TRANSFORMER WITH A SURFACE SHIELD LAYER

Yasuyuki Takahara; Hirofumi Kubo, both of Nakajomachi; Shigeo Hosaka, Hitachishi; Tomomi Izuna, and Toshiyuki Fujimori, both of Nakajomachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 20, 1983, Ser. No. 505,720
Claims priority, application Japan, Jun. 29, 1982, 57-110769
Int. Cl.[4] H01F 15/04
U.S. Cl. 336—84 C 10 Claims



1. A transformer having an iron core and a molded coil coated with an insulating resin and disposed in combination with said iron core, wherein a conductive shield layer divided

into a plurality of segments is provided on the resin surface of said molded coil except the peripheral portions of terminals and a conductor for grounding the plurality of segments of said shield layer, wherein the edges of the segments of said shield layer are thinner than the remaining portions thereof.

4,586,016

HIGH VOLTAGE TRANSFORMER FOR DEFLECTION OF ELECTRON BEAMS

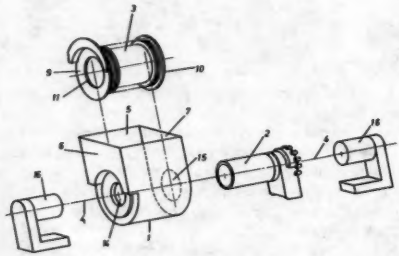
Gerard Rilly, VS-Pfaffenweiler; Gerard Morizot; Daniel Lopez, both of Villingen-Schwenningen, and Erich Weisser, Mönchweiler, all of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, VS-Villingen, Fed. Rep. of Germany

Filed Apr. 2, 1984, Ser. No. 595,918

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311775

Int. Cl.[4] H01F *27/02, 27/30, 41/02*

U.S. Cl. 336—96 **18 Claims**



1. A transformer for generating a high voltage for control of an electron beam comprising a second winding body comprising a secondary winding for providing a high voltage;

a case surrounding the second winding and having a second opening in an end wall located at a plane disposed parallel to the axis of the secondary winding for allowing the insertion of the second winding body into the case through the second opening;

an electrical connection for the second winding body and running through said second opening;

a first winding body comprising a primary winding disposed concentrically to the second winding body; and

means on the edge of said second winding body providing a seal for the liquid plastic resin during filling of the case and preventing the resin from extending to the first winding body such that the first winding body can be exchanged or inserted into the second winding body;

a cast of synthetic resin disposed in the case and surrounding the second winding body.

4,586,017

PERSISTENT CURRENT SWITCH FOR HIGH ENERGY SUPERCONDUCTIVE SOLENOIDS

Evangelos T. Laskaris, Schenectady, and Donald W. Jones, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 12, 1983, Ser. No. 530,925

Int. Cl.[4] H01L *43/00*

U.S. Cl. 338—32 S **15 Claims**

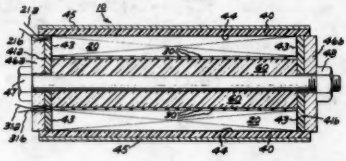
1. A persistent current switch for high energy superconductive circuits comprising:

a substantially closed housing;

a length of electrically insulated superconductive conductor disposed in said housing;

means for thermally insulating said housing;

a mass of material exhibiting a high thermal conductivity, said material being disposed within said housing and in thermal contact with at least a portion of said superconductive conductor; whereby heat generated within said housing is rapidly and uniformly transmitted throughout the interior volume of said housing, and



means for heating at least a portion of said superconductive conductor, said heating means being disposed within said housing.

4,586,018

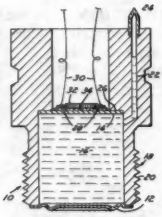
COMBUSTION PRESSURE SENSOR

Max Bettman, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 533,483, Sep. 19, 1983, abandoned. This application May 3, 1985, Ser. No. 730,250

Int. Cl.[4] H01L *10/10*

U.S. Cl. 338—42 **9 Claims**



1. A combustion pressure sensor means for mounting on an internal combustion engine so as to have access to the interior of a combustion cylinder, said sensor means having:

a first diaphragm means adjacent a combustion region for deflecting as a function of the magnitude of adjacent pressure in the combustion region, and for acting as a gas tight seal between the combustion region and an interior volume of said combustion pressure sensor means;

a second diaphragm means, spaced from said first diaphragm means, for deflecting as a function of the deflection of said first diaphragm and generating a signal indicative of the deflection of said second diaphragm means;

a force transmitting means located between said first diaphragm means and said second diaphragm means for transmitting movement from said first diaphragm means to said second diaphragm means, and for reducing the speed and amplitude of heat transmission from said first diaphragm means to said second diaphragm means; and

said second diaphragm including a steel member having a portion coated with an electrically insulating glass enamel, upon which is formed a thick film piezoresistor for use as a thick film resistive strain gauge and overlapping thick film conductor terminations for use as electrically conductive contacts, said thick film piezoresistor having a baseline resistance which can be temperature compensated by resistance measurement between successive combustion firings in the interior of the combustion cylinder.

4,586,019

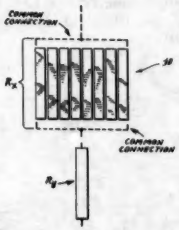
MATCHING OF RESISTOR SENSITIVITIES TO PROCESS-INDUCED VARIATIONS IN RESISTOR WIDTHS

Adrian P. Brokaw, Burlington, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Division of Ser. No. 423,255, Sep. 24, 1982. This application Aug. 15, 1985, Ser. No. 765,809

Int. Cl.[4] H01C *10/00*

U.S. Cl. 338—195 2 Claims



1. An integrated circuit device including a pair of different-sized resistors deployed in a predetermined ratio of resistance, at least one of said resistors comprising a series of parallel sections, comprising

a first resistor, R_m, having sensitivity S_m, which has been divided into n sections in order to match said first resistor R_m to a second resistor, R_r, having sensitivity S_r; wherein

$$S = \frac{-\left(\frac{R_1}{W_1} + \frac{R_2}{W_2} + \ldots + \frac{R_i}{W_i}\right)}{R_{TOTAL}};$$

where

$R_{TOTAL} = \rho(L_1/W_1 + L_2/W_2 + \ldots + L_i/W_i)$; and

where, for any resistor,

ρ = sheet resistivity,

L_i = length of resistor section,

W_i = width of resistor section, and

R_i = resistance of resistor section;

and, before such division is performed;

n = integer which is at least approximately equal to the ratio

$$\frac{S_r}{S_m} \text{ when } S_r \geq S_m;$$

10 or

n = integer which is at least approximately equal to the ratio

$$\frac{S_m}{S_r} \text{ when } S_m > S_r.$$

4,586,020

SHEATHED RESISTANCE HEATER

Noboru Naruo, and Hidekata Kawanishi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

PCT No. PCT/JP82/00171, § 371 Date Jan. 17, 1983, § 102(e) Date Jan. 17, 1983, PCT Pub. No. WO82/04171, PCT Pub. Date Nov. 25, 1982

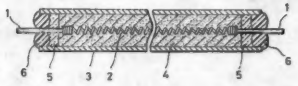
PCT Filed May 17, 1982, Ser. No. 460,242

Claims priority, application Japan, May 18, 1981, 56-75203; May 18, 1981, 56-75204; May 18, 1981, 56-75206; May 19, 1981, 56-76208; May 19, 1981, 56-76235; May 20, 1981, 56-77182

Int. Cl.[4] H01C *1/03*

U.S. Cl. 338—238 1 Claim

PRIOR ART



1. A sheathed resistance heater comprising a metal pipe, an electrical metal heating wire received in said metal pipe, and an electrically insulating powder composition filling said metal pipe, said electrically insulating powder composition including at least one electrically insulating powder uniformly mixed with 0.1–10 wt.% of at least one oxide selected from the group consisting of NiO, CoO, and mixtures thereof, so that said electrical metal heating wire is insulated from said metal pipe by said insulating powder composition and said at least one oxide prolongs the insulation resistance and life of said sheathed resistance heater.

4,586,021

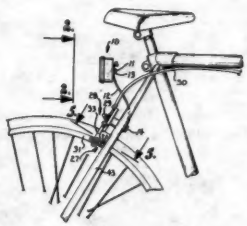
BICYCLE BRAKING INDICATOR LIGHT ASSEMBLY

Paul G. Nickols, Box 1182, Kansas City, Mo. 64141

Filed Oct. 31, 1983, Ser. No. 547,069

Int. Cl.[4] B62J *5/00*

U.S. Cl. 340—134 3 Claims



1. For a bicycle having a braking light indicator system which is responsive to braking of the bicycle, said bicycle including a hand operated caliper brake mechanism having a pad carrying caliper arm removable between non braking and braking positions,

said indicator system including

(a) an electric lamp mounted on the bicycle,

(b) means for providing a source of electrical energy for said lamp,

(c) switch means operable to connect and disconnect said source with said lamp, said switch means including electrical switch contact members, one of said members moveable relative to the other between a switch closed and switch open condition, said one member resilently biased toward the closed position, said switch means mounted on said caliper arm and so positioned on said caliper arm relative to the bicycle that when the caliper arm is in a non-braking position the moveable contact of the switch is

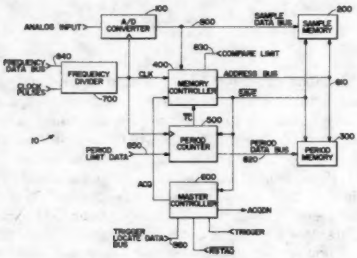
engaged by a surface on said bicycle fixed in position relative to said caliper arm and operable to deflect and hold the moveable contact in the switch open condition, and when the caliper arm is in a braking position the moveable contact is disengaged from said fixed surface and is in the switch closed condition, thereby to connect said source with said lamp.

4,586,022

WAVEFORM MEMORY CIRCUIT

Mark Acuff, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 13, 1984, Ser. No. 681,398
Int. Cl.[4] H03K *13/02*
U.S. Cl. 340—347 AD **20 Claims**



1. An apparatus for converting an analog waveform to stored digital data representative of said signal comprising:

a converter to sample the waveform and output digitally encoded data representing successive samples of the waveform,

a memory for storing digitally encoded samples of the waveform, and

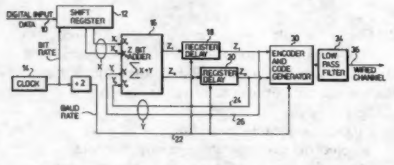
means for detecting change in the digitally encoded output by a predetermined amount for thereupon initiating storage of digitally encoded data in said memory representative of a given sample.

4,586,023

MEANS AND METHOD FOR DATA TRANSMISSION ON WIRED CHANNELS

Malcolm G. Thomson, Ontario, Canada, assignor to Motorola Information Systems Limited, Brampton, Canada

Filed Jun. 6, 1984, Ser. No. 617,974
Int. Cl.[4] H03M *7/00*
U.S. Cl. 340—347 DD **15 Claims**



1. Means for encoding binary data two bits at a time at a predetermined binary data rate into one of the four signals:

H	H	L	L
H	L	L	H
L	L	H	H
L	H	H	L

where each of the four possible combinations of two data bits is in one-to-one correspondence with one of the four signals,

where each of the signals encompasses a baud having the same duration as two bits at the binary data rate, the H and L represent high and low voltage levels of the signal, respectively, and the duration of each level present in such signals is one quarter of the baud time,

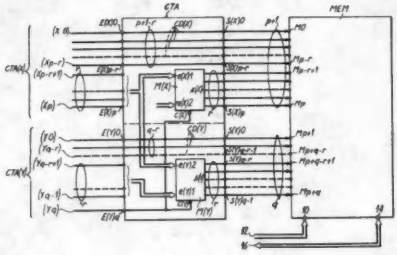
said means for encoding binary data in combination with means for transmitting the levels of such signals onto a wired communications channel in unmodulated form.

4,586,024

WORD STORE EQUIPPED WITH AN ADDRESS CODE CONVERSION CIRCUIT

Alain Brion, 15, rue Kermen, F 92140 Clamart, France

Filed Jan. 30, 1984, Ser. No. 574,903
Claims priority, application France, Feb. 1, 1983, 83 01544
Int. Cl.[4] G06F *3/00*
U.S. Cl. 340—347 DD **5 Claims**



1. A store for storing A×B words, in which A and B are numbers proving the inequations:

$$2^p < A < 2^{p+1}$$

$$2^q < B < 2^{q+1}$$

$$2^{p+q} < A \times B < 2^{p+q+1}$$

in which p and q are integers, wherein it comprises p+q+1 addressing inputs connected to an address code conversion circuit (CTA) which is in two parts:

(a) a first part (CTA)X constituted by:

p+1 inputs E(X)0 . . . E(X)p and p+1 outputs S(X)0 . . . S(X)p, the p+1 inputs receiving p+1 bits (X0 . . . Xp) defining a number X lower than A, said bits being distributed between a least significant bit X0 and a most significant bit Xp, the p=1 outputs being connected to p+1 first addressing inputs (M0 . . . Mp) of the store MEM,

p=1−r direct connections CD(X) between the p=1−r inputs allocated to the p+1−r least significant bits of X and p+1−r outputs;

a first multiplexer M(X) having a first group E(X)1 of the r inputs receiving logic expressions of the r most significant bits (Xp−r+1 . . . Xp) of X received by the r corresponding inputs, and a second group e(X)2 of r inputs raised to the same predetermined logic level, said first multiplexer having r outputs s(X) connected to the r remaining outputs of said first part;

b. a second part CTA(Y) constituted by:

q+1 inputs E(Y)0 . . . E(Y)q and q outputs S(Y)0 . . . S(Y)q−1, the q+1 inputs receiving the q+1 bits (Y0 . . . Yq) defining a number Y less than B, said bits being distributed between a least significant bit Y0 and a most significant bit Yq, the q outputs being connected to the q final addressing inputs (Mp+1 . . . Mp+q) of the memory;

q−r direct connections CD(Y) between the q−r inputs allocated to the q−r least significant bits Y and q−r outputs;

a second multiplexer M(Y) having a first group e(Y)1 of r inputs receiving logic expressions of the r most significant bits (Yq−r+1 . . . Yq−1) of Y taken after the most significant bit of Y (Yq) and a second group e(Y)2 of r inputs connected to the first group of r inputs e(X)1 of the first multiplexer M(X) of the first part, said second multiplexer having r outputs s(Y) connected to the r remaining outputs s(X)q−r . . . S(Y)q−1 of said second part;

each multiplexer also having a control input C(X), C(Y), which receives the most significant bit Yq of the number Y applied to the most significant input E(Y)q of the second part, the r addressing inputs (Mp−r+1 . . . Mp) of the store connected to the outputs of the first multiplexer M(X) thus receiving, according to the value of the most significant bit Yq of Y, either r logic expressions of the r most significant bits (Xp−r+1 . . . Xp) of X, or r predetermined logic levels and the r addressing inputs (Mp+q−r+1 . . . Mp+q) of the store connected to the outputs of the second multiplexer M(Y), receiving in the same way either the r most significant bits of Y taken after the most significant bit (Yq=r+1 . . . Yq−1), or the r most significant bits of X (Xp−r+1 . . . Xp), whereby hereinbefore r is an integer proving the relations:

$$(2^r-1)2^{p+1-r} \geq A$$

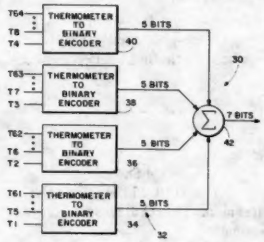
$$2^q+2^{q-r} \geq B.$$

4,586,025

ERROR TOLERANT THERMOMETER-TO-BINARY ENCODER

Daniel G. Knierim, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 4, 1985, Ser. No. 784,415
Int. Cl.[4] H03M *7/00*
U.S. Cl. 340—347 DD **5 Claims**



1. A method for producing a binary code corresponding to a first thermometer code, each bit of said first thermometer code being represented by the state of a separate one of a set of digital signals, the method comprising the steps of:

grouping said signals into selected subsets each representing a further thermometer code;

converting each said signal subset thermometer code into a corresponding binary code; and

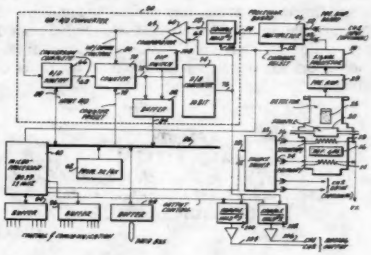
summing the binary codes representing each signal subset to produce the binary code corresponding to said first thermometer code.

4,586,026

INFRARED GAS ANALYZER USING COUNT QUADRATURE SAMPLING

James R. Braig, Santa Ana, and Max D. Liston, Irvine, both of Calif., assignors to Liston Edwards, Inc., Newport Beach, Calif.

Filed Nov. 7, 1983, Ser. No. 549,411
Int. Cl.[4] H03K *13/00*
U.S. Cl. 340—347 AD **10 Claims**



1. An apparatus for use in combination with an optical bench for generating an analog composite signal, said analog composite signal comprised of a primary component derived from a reference beam generated by a primary source and a secondary component derived from a sample beam generated by a secondary source, said apparatus comprising:

first means for digitizing said analog composite signal;

second means coupled to said first means, said second means for demodulating said digitized composite signal into a digitized primary component and secondary component; and,

third means coupled to said second means, said third means for generating the ratio of said secondary component to said primary component;

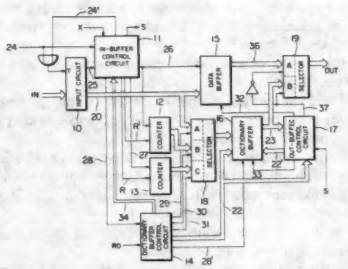
whereby common mode rejection within said composite signal is achieved in said apparatus in a digital format.

4,586,027

METHOD AND SYSTEM FOR DATA COMPRESSION AND RESTORATION

Tokuhiro Tsukiyama, Kanagawa; Yoshie Kondo, Odawara; Katsuharu Kakuse, Hadano; Shinpei Saba, Hiratsuka; Syoji Ozaki, Kanagawa, and Kunihiro Itoh, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1984, Ser. No. 638,424
Claims priority, application Japan, Aug. 8, 1983, 58-143841
Int. Cl.[4] G06F *5/00*
U.S. Cl. 340—347 DD **7 Claims**



1. A data processing method for transforming an input data string including at least one first region consisting of a series of data less in the number of repetitive data than a predetermined

value and at least one second region consisting of repetitive data more or equal in the number of repetitive data to said predetermined value into an output data string in a form where said second region is compressed, said method comprising the steps of:

(a) identifying said first and second regions on the basis of the repetition of the same data in said input data string and counting the number of data included in each of said regions; and

(b) combining information indicative of the number of data of said first region at the front and back of said first region, pairing a datum representative of said second region with information indicative of the number of data of said second region, and outputting the results in the order of data input.

4,586,028

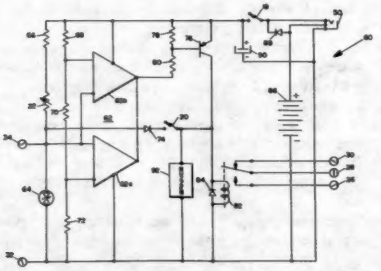
ALARM SYSTEM

George T. McKinzie, Rte. 5, Box 299, Rainerd, Minn. 56401

Filed Jul. 11, 1983, Ser. No. 512,767

Int. Cl.[4] G08B *23/00, 13/08*

U.S. Cl. 340—500 **4 Claims**



1. Alarm system for protection of sport accessories including bicycles, motorcycles, boats, motors, snowmobiles, and intended for use at home, at work, on vacation or when traveling comprising:

a. integrated circuit low-power low-offset dual voltage comparators including separate inputs, one of said comparators as a monitor comparator, said input of said monitor comparators for connection to a monitoring loop;

b. a variable line adjustment means connected across said input of the other of said comparators as a line adjust comparator;

c. a monitor lead cable including a monitor loop and including a predetermined resistance through a resistor and length of wire in said monitor loop, and including an automobile connector means along a length of said loop for connection through said sport accessories to an input of said monitor loop comparator;

d. the output of said comparators connected to a switching transistor;

e. a relay including normally closed contacts, common, and normally open contacts connected between said switching transistor and ground;

f. alarm means connected to said switching transistor;

g. a latch means connected between a node of said alarm means, and said switching transistor and said relay and said input of said comparators;

h. power source means connected across said switching transistor and said relay; and,

i. housing means for enclosing said alarm system and including a panel for supporting a wiring block, said wiring block including terminal connections for line, ground, normally open, and normally closed terminals, said panel supporting said line and said ground terminal connections for said monitor lead cable and wired to one of said dual voltage comparators and said normally open, common and normally closed terminals connections connected to said relay, an auxiliary power input connected between, an ON/OFF switch, line-adjust switch, and latch-normal switch whereby said alarm system is utilizable in either a fixed or remote location, and can be powered by said power means internally or externally, and provides an internal alarm signal as well as said normally open and said normally closed connections for external switched alarm signals, thereby providing an alarm system for sport items.

4,586,029

BLUR DETECTING DEVICE

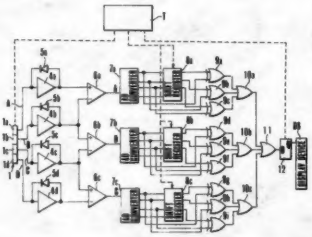
Shuichi Tamura, and Kiyoshi Iizuka, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1983, Ser. No. 546,082

Claims priority, application Japan, Oct. 29, 1982, 57-188987

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—540 **21 Claims**



1. A detector for detecting the moving of a still picture image, comprising:

(a) a plurality of light receiving means arranged to detect a light flux from an object;

(b) a plurality of storing means arranged in association with said plurality of light receiving means to store values of light fluxes received by said light receiving means;

(c) computing means for computing ratios between the outputs of said plurality of storing means; and

(d) comparison means for comparing the outputs of said computing means produced for different lengths of light receiving time of the light receiving means.

4,586,030

PROTECTIVE GRATING

Horst Klostermann, Maischützenstr. 2c, 4630 Bochum, Fed. Rep. of Germany

Filed Feb. 1, 1984, Ser. No. 576,000

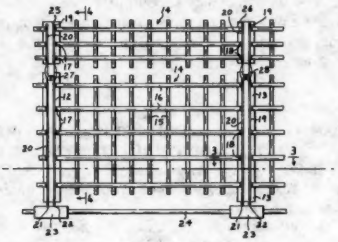
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1983, 3304186; Mar. 24, 1983, 3310726

Int. Cl.[4] G08B *13/18*

U.S. Cl. 340—550 **5 Claims**

1. A protective grating for guarding building openings and the like, said protective grating comprising straight hollow grating rods having an optical supervisory system for triggering an alarm signal when the grating rods are cut or bent, said optical supervisory system including light diodes and photo diodes disposed on respective opposite ends of said grating rods, the light passing therebetween passing through the hollow space of the grating rods directly from the light diodes to

the photo diodes, said protective grating being employed in a fence having hollow fence posts and the hollow grating rods



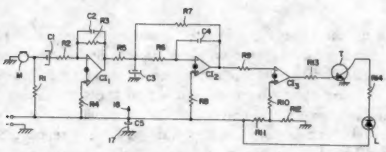
extending horizontally with their ends projecting into the hollow spaces of the fence posts.

4,586,031

INFRA-SONIC DETECTOR, AND ALARMS INCLUDING SAME

Raymond Grinneiser, Nice, France, assignor to Electronique Guglielmetti V.G. Electronique, Nice, France

Filed Sep. 8, 1983, Ser. No. 530,423
Claims priority, application France, Mar. 12, 1982, 82 04464
Int. Cl.[4] G08B *13/22*
U.S. Cl. 340—566 **7 Claims**



1. A passive intrusion detector and alarm device comprising in electrical series:

an infrasonic detector (1) comprising:

a pressure pick-up (2) adapted for sensing pressure variations occurring in the atmosphere of the space to be monitored, and producing a corresponding electric pressure signal;

amplifier means (3) for amplifying said pressure signal;

low-pass filter means (4) for retaining only infrasonic signals from the signals delivered by said amplifier means;

threshold means (6) for comparing the signal from said low-pass filter means to a fixed reference thereby delivering a trigger signal; and

alarm means (14) activated by said trigger signal.

4,586,032

WARNING SYSTEM FOR DOZING AT WHEEL

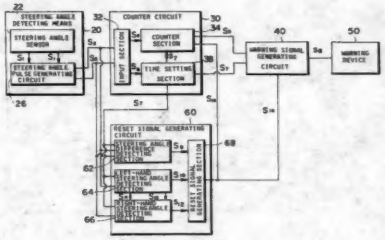
Yasutoshi Seko, Yokohama; Takayuki Yanagishima, Yokosuka, and Noburu Fukasawa, Kamakura, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

PCT No. PCT/JP81/00264, § 371 Date May 7, 1982, § 102(e) Date May 7, 1982, PCT Pub. No. WO82/01168, PCT Pub. Date Apr. 15, 1982
PCT Filed Oct. 5, 1981, Ser. No. 377,198
Claims priority, application Japan, Oct. 6, 1980, 55-139662
Int. Cl.[4] G08B *21/00*; B60Q *5/00*
U.S. Cl. 340—576 **13 Claims**

1. A doze warning system comprising:

a steering angle detecting means 20 for producing steering angle pulses S_2 or S_3 depending on the steering direction every time the steering angle changes by a predetermined angular value;

a reset signal generating circuit 62 differentially counting pulses S_2 and S_3 and producing a reset signal S_9 when the difference reaches a predetermined value within a predetermined period measured from inputting the first steering angle pulse;



a warning signal generating means 30 and 40 for producing a warning signal S_8 when a counter value of the steering angle pulses reaches a predetermined threshold value within said given period, which counter value is reset in response to said reset signal; and

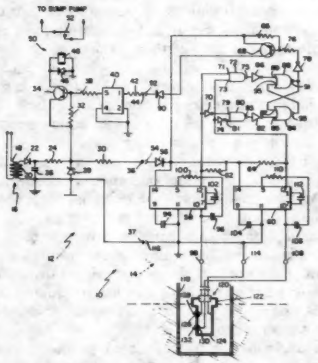
a warning device responsive to said warning signal to produce warning.

4,586,033

FLUID DETECTION SYSTEM

Raymond J. Andrejasich, Carmel, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Feb. 13, 1984, Ser. No. 579,431
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—603 **17 Claims**



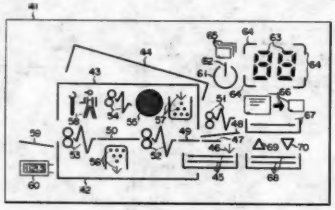
1. An apparatus for sensing the presence of polar and non-polar fluids comprising sensing means for sensing the difference between a polar fluid and a non-polar fluid, signal means providing a fluid polar characteristic related signal, detecting means for detecting a state of the fluid, signal means providing a fluid state related signal, logic means responsive to the fluid polar characteristic related signal and the fluid state related signal for determining if the state of the fluid is a liquid and for determining the polar characteristic of the liquid.

4,586,034

COLOR CODED COPIER DISPLAY

Chosin Nakamine, Okinawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 10, 1982, Ser. No. 448,474
Claims priority, application Japan, Dec. 26, 1981, 56-213025
Int. Cl.[4] G08B 21/00
U.S. Cl. 340—679 **4 Claims**



1. A color coded copier display device for an electrophotographic copying machine having movable parts said device comprising:

a plurality of detection means for detecting predetermined conditions of the electrophotographic copying machine,

condition-judging means for deciding a particular condition of the copying machine upon receipt of an output signal from any of said detection means,

display means having a plurality of display segments representing graphically conditions of said copying machine and corresponding countermeasures if the conditions are malfunctions, said display segments having first color patterns representing critical malfunction conditions of the copying machine and second color patterns representing non-critical malfunction conditions of the copying machine, and

display signal forming means for supplying a display drive signal to said display means, said display drive signal corresponding to at least one of the critical and non-critical malfunction conditions, and the corresponding countermeasure thereof, in conformity with an output of said condition-judging means to allow at least one of the first and second color patterns representing at least one of the critical and non-critical malfunction conditions and the countermeasure thereof to be displayed on said display means, said display signal forming means comprising:

(a) display signal-generating means connected to said condition-judging means for sending forth a binary code signal to display a given condition of said copying machine and a countermeasure to cope with said condition;

(b) timing circuit means for generating clock signals for synchronizing the various operations of the display device and also for sending forth a latch signal in synchronization with a prescribed one of said clock signals;

(c) signal-holding means connected to said display signal-generating means and timing circuit means, for temporarily holding an output binary code signal from said display signal-generating means, and for producing an output signal upon receipt of a clock signal from said timing circuit means; and

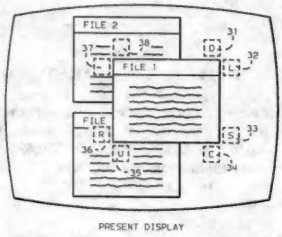
(d) drive circuit means connected to said signal-holding means and timing circuit means, for receiving a binary code signal in synchronization with a particular clock signal, and, when data has been received on a particular condition of said copying machine, for holding data represented by the binary code signal upon receipt of a latch signal, and for sending forth a drive signal according to the contents of the temporarily held data, said drive circuit means being connected with a drive signal-generating circuit for generating said drive signal and including: a plurality of shift registers for temporarily holding an output binary code signal from said signal-holding means; store registers corresponding to the plurality of shift registers, which upon receipt of a latch signal, store data read out of the corresponding shift registers; and a switching circuit which receives an output drive signal from the drive signal-generating circuit, and sends forth a drive signal in conformity to the contents of the data stored in the store registers.

4,586,035

DISPLAY TERMINAL WITH A CURSOR RESPONSIVE VIRTUAL DISTRIBUTED MENU

David C. Baker; Kathryn A. Bohrer, and Gregory A. Flurry, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 29, 1984, Ser. No. 584,686
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—712 **12 Claims**



1. In an interactive display terminal comprising a display screen having at least one window having lesser dimensions than said display screen and displaying subject matter different from that displayed on the remainder of the screen, the improvement wherein said display further comprises

a virtual menu comprising a plurality of items respectively distributed about the periphery of said window and not displayed in normal operations,

cursor means on said screen,

means for moving said cursor, and

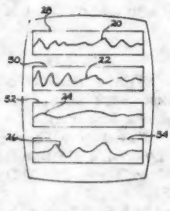
means responsive to the movement of said cursor across selected regions in said periphery for displaying selected menu items respectively associated with said regions.

4,586,036

GRAPHICS DISPLAY SYSTEMS

Robert L. Thomason, Corona del Mar, and Joseph C. Tipton, Fountain Valley, both of Calif., assignors to Advanced Computer Concepts, Inc., Costa Mesa, Calif.

Filed Feb. 28, 1983, Ser. No. 470,455
Int. Cl.[4] G09G 1/00
U.S. Cl. 340—720 **28 Claims**



1. In a graphics display system, the improvement comprising

a raster scan display, said display being characterised by a vertical raster scan

memory means for storing digital data to be displayed, said memory means being a means for storing said digital data wherein the relative vertical position of each data point to

be displayed on each vertical raster scan is stored in binary coded form

digital communication means coupled to said memory means for receiving digital data to be displayed from an auxiliary digital device in said binary coded form and coupling said digital data to said memory means

video sync generation means for providing vertical and horizontal sync signals and for providing a pixel clock signal for each raster scan

trace control means coupled to said memory means and said video sync generation means, said trace control means having an addressing means for addressing said memory synchronized to said vertical and horizontal sync signals to botain coded data to be displayed for each vertical raster scan, and a digital counter means responsive to said pixel clock signal for each scan to provide a digital trace signal indicative of a pixel clock signal counter corresponding to the coded data for that scan, and

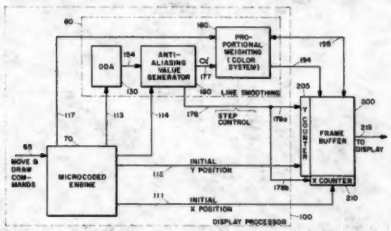
video generation means coupled to said digital counter means of said trace control means, said video sync generation means and said display, said video generation means being a means for providing a video signal to said display to display said data in graphic form responsive to said digital trace signal.

4,586,037

RASTER DISPLAY SMOOTH LINE GENERATION

Harvey J. Rosener, Sherwood; David L. Knierim, Wilsonville, and John C. Dalrymple, Newberg, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 7, 1983, Ser. No. 472,463
Int. Cl.⁴ G09G *1/06*
U.S. Cl. 340—728 **13 Claims**



1. In a raster type image-generating system, a high speed arrangement for generating for display a smooth line of consistent thickness regardless of slope, in which said line is defined by a starting end point position and a concluding end point position specified to a fractional pixel precision comprising:

(a) first means for deriving information representing the slope of said line to n bits of said fractional pixel precision;

(b) means, responsive to said end point positions and to said first deriving means, for identifying a plurality of pixel positions relevantly proximate to said end point positions, and for identifying a plurality of one-dimensional arrays, each of said arrays being at least three contiguous pixel positions defining a cross-section point of the interior portion of said line between said end point positions;

(c) second means, responsive to said end point positions and said deriving means, for deriving information representative of the distance of each of said pixel positions of said arrays from said line;

(d) first means, responsive to said starting end point position, to said second deriving means and to said identifying means, for determining a value representative of a level of intensity between a selected minimum and maximum to be associated with each of said pixel positions relevant to said starting end point position, said value being a function of the location of said pixel position relative to said starting end point position;

(e) second means, responsive to said first and second deriving means and said identifying means, for determining a value representative of a level of intensity between said selected minimum and maximum to be associated with each of said pixel positions of each of said arrays, said value being a function of the slope of said line and the distance between said pixel position and said line; and

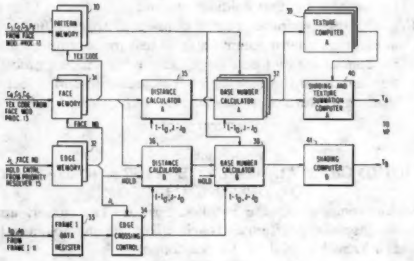
(f) third means, responsive to said concluding end point position, to said second deriving means and to said identifying means, for determining a value representative of a level of intensity between said selected minimum and maximum to be associated with each of said pixel positions relevant to said concluding end point position, said value being a function of the location of said pixel position relative to said concluding end point position.

4,586,038

TRUE-PERSPECTIVE TEXTURE/SHADING PROCESSOR

Edward M. Sims, Ormond Beach, and Jimmy E. Chandler, Holly Hill, both of Fla., assignors to General Electric Company, Syracuse, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,147
Int. Cl.⁴ G09G *1/06*
U.S. Cl. 340—729 **10 Claims**



1. In a computer image generator of the type wherein computations are performed in sequence by a plurality of groups including a first group which manages a visual data base and transfers data to an active environment storage of a second group, said first group determining the position of a viewpoint and any moving models in a common coordinate system and generating trigonometric coefficients required for perspective transformation, said second group reducing a three-dimensional description of the environment supplied by said first group to a two-dimensional description, making perspective transformation of data into coordinates of a view window and assigning a priority to each surface of the computed scene, and a third group which reduces the two-dimensional description generated by said second group to a scan line by generating edge data to locate where edges cross the scan line and responds to the assigned priorities to eliminate hidden surfaces and generates the video for display including edge smoothing, shading and texture effects, the improvement comprising texture/shading processing means which defines modulations globally over an entire simulated, visual environment, said texture/shading processing means comprising:

face modulation processing means in said second group for computing data describing each one of a plurality of texture and shading models and data describing the plane of each one of a plurality of textured or shaded faces;

texture/shading generator means in said third group responsive to initialization data from said first group and the data computed by said face modulation processing means for computing texture and shading modualtion signals based on a model using parallel planes defined in three-dimen-

sional space to divide any number of faces into texture and shading stripes wherein said texture/shading generator means comprises:

pattern memory means connected to said face modulation processing means for storing the data describing each texture and shading model;

face memory means connected to said face modulation processing means for storing the data describing the plane of each textured or shaded face;

edge memory means for storing edge data;

data register means connected to said first group for storing a line and element number of a pixel at a relative line number and element number;

edge crossing control means connected to said edge memory memory means and said data register means for computing a relative line number and element number;

first distance calculator means connected to said face memory means and said edge crossing control means and responsive to data addressed by said edge memory means for computing the distance to each pixel group;

first base number calculator means connected to said pattern memory means, said edge crossing control means and said first distance calculator means and responsive to data addressed by said face memory means for mapping each pixel group into texture stripe numbers;

texture computer means connected to said first base number calculator means for storing texture modulating maps and computing blending and smoothing of the maps selected by the base number calculation; and

first shading computer means connected to said first base number calculator means and said texture computer means for computing by linear interpolation the shading modulation based on the base number calculation and selecting shading, texture or no modulation to the video for display.

4,586,039

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR DRIVING THEREOF

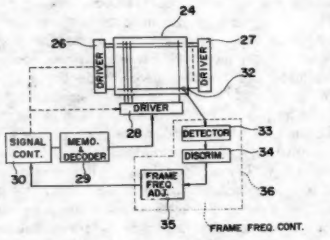
Keisaku Nonomura, Nara; Fumiaki Funada, Yamatokoriyama, and Masataka Matsuura, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 26, 1983, Ser. No. 489,276

Claims priority, application Japan, Apr. 26, 1982, 57-70820

Int. Cl.⁴ G09G *3/36*

U.S. Cl. 340—784 **10 Claims**



1. A method for driving a liquid crystal display device having a matrix type liquid crystal display cell including a plurality of gate lines and source lines intersecting each other; a transistor array substrate including a plurality of FETs each of which is provided at an intersection of a gate and a source line and is connected to define a picture element; a counter substrate having a plurality of common electrodes aligned in parallel to said gate lines, said transistor array substrate and counter substrate being provided in a spaced relation to each other to define a cavity therebetween; and liquid crystal material disposed in said cavity, said method comprising the steps of:

applying a counter electrode voltage that alternately varies between an odd frame and an even frame to each said common electrode;

applying an a.c. voltage to said liquid crystal material at a said picture element to be written-in by applying a voltage having a phase opposite to that of said counter electrode voltage to said picture element in response to the conduction of said FET connected thereto;

offsetting a voltage applied to said liquid crystal material at a said picture element not to be written-in by applying a voltage having the same phase as that of said counter electrode voltage to said picture element in response to the of said FET connected thereto;

detecting a characteristic change of at least one said FET; and

adjusting frame frequency based on a detected characteristic change of said FET so that the voltage applied to each said picture element by a said FET is substantially the same as that of counter electrode voltage applied to each said common electrode.

4,586,040

INTERRUPTION HANDLING SYSTEM IN TIME DIVISION MULTIPLEX REMOTE CONTROL SYSTEM

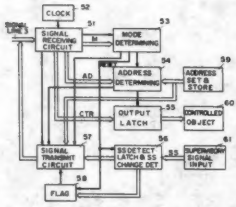
Osamu Akiba, Meyagawa; Yoshiharu Suzuki, Kadoma; Motoharu Terada, Higashiosaka, and Takashi Saeki, Shijonawate, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Mar. 30, 1983, Ser. No. 480,590

Claims priority, application Japan, May 15, 1982, 57/81850

Int. Cl.⁴ H04Q *9/00*

U.S. Cl. 340—825.08 **8 Claims**



1. A time division multiplex remote control system for data transmission between a central controller and addressable remote terminals coupled to the central controller through a signal line, said terminals being divided into groups each group including a predetermined number of terminals,

said central controller comprising

transmission signal generating means for generating a transmission signal to be transmitted, said transmission including terminal identifying information for identifying one of said terminals which is to receive said transmission signal to be transmitted, control information indicating a control to be performed in said terminal, and a reply signal standing-by period defining signal for defining a period for receiving a reply signal returned from the terminal identified by said terminal identifying information, said terminal identifying information including group address identifying information identifying a group in which each terminal is included and individual terminal identifying information for identifying individually the terminal included in the group,

transmission signal transmitting means for transmitting as the transmission signal group address identifying information as the terminal identifying information generated by said transmission signal generating means,

receiving means for receiving a signal sent by said terminals, and

control information producing means responsive to the

received reply signal for producing necessary control information,

each of said plurality of terminals comprising:

store means for storing identifying information identifying the terminal,

receiving means for receiving the transmission signal being transmitted from said central controller,

control information accepting means responsive to the receiving means for accepting said control information included in said transmission signal when the received terminal identifying information coincides with the identifying information stored in the store means,

reply signal transmitting means responsive to the receiving means for transmitting a reply signal in response to the reply signal standing-by period defining signal included in the received transmission signal when the received terminal identifying information coincides with the identifying information stored in the storing means,

change-of-supervisory input detecting means for detecting a change of the supervisory input of an object to be controlled which the terminal supervises and producing an output,

interruption request signal generating means for generating an interruption request signal in response to the output from the change-of-supervisory input detecting means, and

interruption request signal transmitting means for transmitting an interruption request signal generated in the interruption request signal generating means at a timing other than reply signal transmitting timing, and

said central controller further comprising:

group accessing mode signal generating means, responsive to the interruption request signal transmitted by the interruption request signal transmitting means of the terminal, for generating a group accessing mode signal for specifying a mode of accessing the terminals by group.

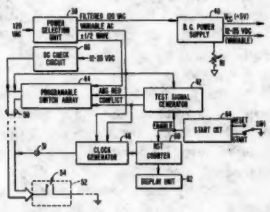
4,586,041
PORTABLE CONFLICT MONITOR TESTING APPARATUS

Donald A. Carlson, 865 Wooten Dr., Kerman, Calif. 93630

Filed Dec. 29, 1983, Ser. No. 566,928

Int. Cl.⁴ G08G *1/097*

U.S. Cl. 340—931 **20 Claims**



1. Apparatus for simulating a malfunctioning traffic signal control for testing response times and operability of a conflict monitor of the type adapted to receive traffic controller signals from a traffic signal controller and to provide an indication of traffic signal controller and upon detection of such malfunction, the apparatus comprising:

circuit means for producing an enable signal;

switch means coupled to the circuit means for receiving the enable signal for initiating a test signal in response to the enable signal;

selection means adapted to be coupled to the conflict monitor for receiving the test signal to develop therefrom simulated traffic controller signals representative of a malfunctioning traffic controller for communication to the conflict monitor;

generating means coupled to the switch means and responsive to initiation of the test signal for generating a timing signal, the generating means including means adapted to receive said indication of traffic signal controller malfunction to terminate the timing signal upon receipt thereof; and

counter means coupled to the generating means to receive the timing signal and to produce therefrom indicia of a response time of the conflict monitor.

4,586,042
VIDEO EXTRACTOR

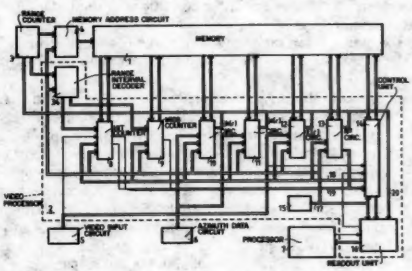
Hendrik C. Bleijerveld, Borne, and Willem Van Den Berg, Apeldoorn, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., New York, N.Y.

Filed Mar. 11, 1983, Ser. No. 474,620

Claims priority, application Netherlands, Mar. 19, 1982, 8201144

Int. Cl.⁴ G01S *7/28, 7/44*

U.S. Cl. 343—5 VQ **13 Claims**



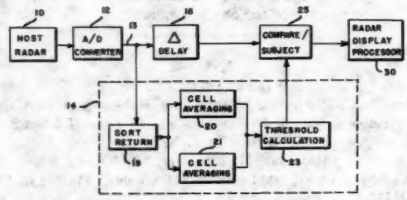
1. In a video extractor for a pulse radar apparatus comprising: a first memory for storing a number of words corresponding to the number of range quanta, into which the range interval to be covered by the pulse radar apparatus is divided, said words containing target information as established for each range quantum; a range counter connected to said memory, said counter having a counting rate equal to the rate at which words are shifted in and out of memory; a video processor connected to said memory and said range counter for receiving the words shifted out of memory, said video processor being responsive to the video and angular data from the pulse radar apparatus and to the range data provided by the range counter to update the target information contained in said words with each successive range sweep and to transfer the words back into memory, the improvement wherein the video processor comprises: a first circuit connected to said memory for determining the initial and final azimuth values, jb(r) and je(r) respectively, of a series of hits for each range quantum r, whenever such a series of hits is established therein; a second circuit connected to said memory for determining the weight E(r) of a series of hits for each range quantum r, whenever such a series of hits is established therein; a third circuit connected to said memory for assigning one and the same target number N to the series of hits established in successive range quanta if such series of hits together form the picture of a single target; and a readout unit connected to said range counter and said first, second and third circuits for supplying for the successive range quanta, the respective quantity r and the respective quantities jb(r), je(r), E(r) and N, forming parts of said words, to a processor connected to said readout unit, said processor being connected to determine from said quantities, insofar they have the same target number, the centre (MR, Mϕ), the direction ϕ, the length L, the width B, and the weight E_o of the target.

4,586,043

DISTRIBUTION SENSITIVE CONSTANT FALSE ALARM RATE (CFAR) PROCESSOR

Mary L. Wolf, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1984, Ser. No. 592,036
Int. Cl.[4] G01S 7/02
U.S. Cl. 343—5 CF **1 Claim**



1. A false alarm control system for eliminating clutter echo return signals corresponding to selectable false alarm rates and responsive to changing clutter conditions in the radar environment comprising:

a signal splitter receiving radar video signals from a host radar system and outputting first and second sets of radar video signals;

a constant false alarm rate processor receiving said first set of radar video signals and calculating the clutter threshold level, said clutter threshold level responsive to changing clutter conditions in the radar environment and corresponding to selectable false alarm rates, said constant false alarm rate processor comprises a data processing system sorting said radar video signals received from said signal splitter by magnitude of the echo return signals of each cell, said data processing system performing first and second cell averaging calculations for a subset of said radar video signals, said data processing system performing said clutter threshold calculation in terms of said selectable false alarm rate and said first and second cell averaging calculations, said constant false alarm rate processor performs said clutter threshold calculation defined by the equation:

$$T = \frac{1}{K_2 - K_1}(LNP + K_2)\overline{x_1} - (LNP + K_1)\overline{x_2}$$

such that

T equals the value of said clutter threshold,

P equals said selectable false alarm rate,

$\overline{X}_1$ and $\overline{X}_2$ equals the value of said first and second cell averaging calculation, and K_1 and K_2 equal the values given by

$$K_1 = \sum_{j=0}^{n-c_1-c_2-1} \frac{1}{n-j} + \frac{1}{c_1} \sum_{j=n-c_1c_2}^{n-c_2} \frac{n-c_2-j}{n-j}$$

and

$$K_2 = \sum_{j=0}^{n-c_2-1} \frac{1}{n-j}$$

where c_1 and c_2 equals the number of cells used in said first and second cell averaging calculations;

a delay circuit receiving said second set of radar video signals from said signal splitter said delay circuit delaying said second set of radar video signals while said clutter threshold level is being calculated by said constant false alarm rate processor;

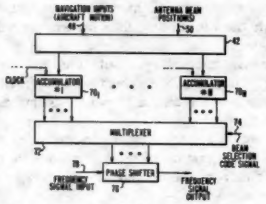
and a compare circuit receiving said second set of radar video signals from said delay circuit and said clutter threshold level from said constant false alarm rate processor, said compare circuit passing on to a display processor of said host radar system the set of said radar video signals whose magnitudes exceed said clutter threshold.

4,586,044

CLUTTER POSITIONING FOR ELECTRONICALLY AGILE MULTI-BEAM RADARS

Francis W. Hopwood, Severna Park, and John W. Gipprich, Catonsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 24, 1983, Ser. No. 460,688
Int. Cl.[4] G01S 13/52
U.S. Cl. 343—7.7 **3 Claims**



1. An electronically agile, pulse-doppler coherent, multi-beam radar disposed on-board an aircraft which includes a means for measuring the velocity of the aircraft in flight, said radar operative to switchedly transmit a plurality of beams directionally separate by time sharing the illuminating power thereof, each beam including at least one transmission of a plurality of R.F. pulses constituting a radar look, said radar also operative to receive echo R.F. pulses of said look from each transmitted beam interspersed in time with echo R.F. pulses of the looks of the other transmitted beams of said plurality, said radar having an interpulse period divided into transmissionable time slots, each time slot corresponding to a potential transmission time for a pulse of a different beam look, said radar comprising:

means for deriving in a time-shared manner a relative phase characteristic for each of the plurality of R.F. pulsed beams in accordance with both the direction of the corresponding beam transmission and said measured aircraft velocity associated therewith, said deriving means operative to perform said derivations for all said aforementioned beams once each transmissionable time slot of said interpulse period;

means for storing said derived relative phase characteristics corresponding to the time slot for which they are derived;

means for accessing each stored relative phase characteristic once each interpulse period corresponding to the time slot associated therewith;

means governed by said accessed relative phase characteristic to effect substantially a desired pulse-to-pulse phase relationship corresponding to the R.F. pulsed beam associated therewith.

4,586,045

WIDE BAND MULTIPLE SIDE-LOBE CANCELLER

John W. Downie, Dewitt, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

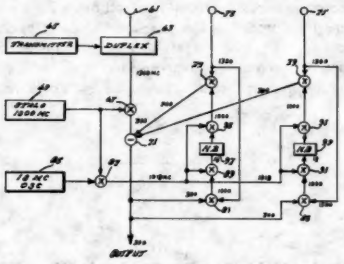
Filed Oct. 5, 1970, Ser. No. 90,196
Int. Cl.[4] G01S 7/36
U.S. Cl. 343—18 E **3 Claims**

1. An IF side-lobe canceller comprising:

(a) a main channel including,

(1) a radar antenna,

(2) a first local oscillator,
(3) a first main mixer fed by the radar antenna and the first local oscillator,
(4) a subtractor to which the output of the first mixer constitutes one input,
(5) a second local oscillator, and
(6) a second main mixer fed by the first and second local oscillators, and
(b) a plurality of auxiliary channels, each channel including,
(1) an omnidirectional antenna,



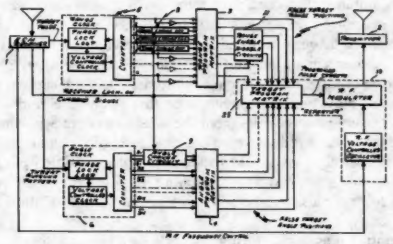
(2) a first auxiliary mixer fed by the omnidirectional antenna and the subtractor,
(3) a second auxiliary mixer fed by the first auxiliary mixer and the second main mixer,
(4) a third auxiliary mixer fed by the second auxiliary mixer and the second main mixer, and
(5) a fourth auxiliary mixer fed by the third auxiliary mixer and the omnidirectional antenna, the output of the fourth auxiliary mixer being fed to the subtractor.

4,586,046

AUTOMATIC REPROGRAMMING MEANS FOR COUNTERMEASURES SYSTEM

Robert D. Pringle, and William A. O'Berry, both of Severna Park, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 64,927, Aug. 5, 1970, abandoned. This application Jun. 13, 1973, Ser. No. 369,029
Int. Cl.[4] G01S *7/38*
U.S. Cl. 343—18 E **7 Claims**



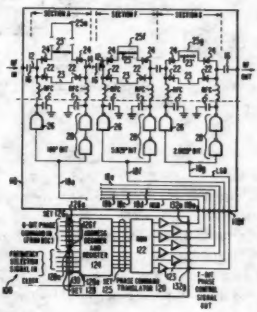
1. In an electronic countermeasures system having; a false target range position program matrix with multiple inputs and outputs; means, responsive to an oscillator clock in phase lock with received threat radar PRF, for delivering discrete digital counts to each said range position matrix input; a false target angle position program matrix with multiple inputs and outputs; means, responsive to an oscillator clock locked in phase and frequency to the scan rate of received threat radar signals, for gating each said angle position program matrix input; and, means for detecting and indicating system receiver lock up information:
automatic reprogramming means comprising;
switching means for alternately changing the polarity of the digital counts delivered to selected inputs of said range position program matrix, said switching means being actuated by command signals responsive to system receiver lock up information.

4,586,047

EXTENDED BANDWIDTH SWITCHED ELEMENT PHASE SHIFTER HAVING REDUCED PHASE ERROR OVER BANDWIDTH

Henry F. Inacker, Cinnaminson; Larry L. Humphrey, Mount Laurel, and David Staiman, Cinnaminson, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 29, 1983, Ser. No. 509,039
Int. Cl.[4] H01Q *3/38*
U.S. Cl. 343—372 **13 Claims**



13. A digital phase shifter for use over an operating frequency range comprising:
means responsive to a frequency selection signal and a phase command signal, for producing a digital control signal with a value which is determined by the value of said frequency selection signal and the value of said phase command signal, said frequency selection signal indicating a selected frequency sub-band which is within said operating frequency range, and said phase command signal specifying a desired phase shift;
a plurality of phase shifting elements connected in series in the propagation path of an AC signal to be phase shifted, each of said phase shifting elements having first and second states and providing a reference phase shift when in said first state and providing an additional increment of phase shift when in said second state, said increments of phase shift changing with frequency;
means responsive to said digital control signal for setting each of said phase shifting elements in either said first or said second state in accordance with the value of said digital control signal; and
means for coupling said digital control signal from said means for producing to said means for setting.

4,586,048

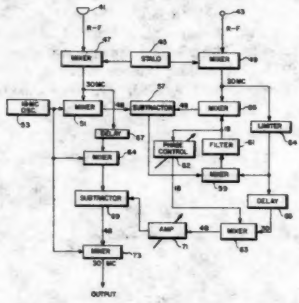
SIDELOBE CANCELLER

John W. Downie, Dewitt, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 4, 1971, Ser. No. 121,185
Int. Cl.[4] G01S *7/36, 3/34*
U.S. Cl. 343—379 **3 Claims**

1. A sidelobe canceller comprising:
a. a directional antenna;
b. a first local oscillator;

c. a first mixer means fed by the directional antenna and the first local oscillator;
d. an omnidirectional antenna;
e. a second mixer means fed by the omnidirectional antenna;
f. a first subtracting circuit means fed by the first and second mixer means;
g. a third mixer means fed by a first subtracting circuit and the omnidirectional antenna;
h. a narrow band filter fed by the third mixer means, the filtered output of the third mixer means constituting a second input to the second mixer means;



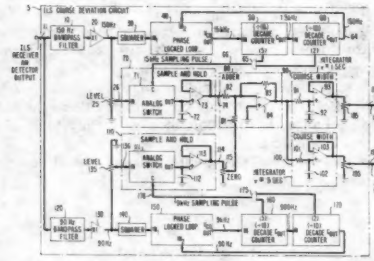
i. a first delay circuit means fed by the omnidirectional antenna;
j. a fourth mixer means fed by the filtered output of the third mixer means and the delayed output of the omnidirectional antenna;
k. a second delay circuit means fed by the first mixer means; and
l. a second subtracting circuit means fed by the fourth mixer means and the delayed output of the first mixer means.

4,586,049

APPARATUS AND METHOD FOR USE IN INSTRUMENT LANDING SYSTEM LOCALIZER AND GLIDE-SLOPE RECEIVERS FOR DERIVING COURSE DEVIATION INFORMATION

Eldon F. Davidson, 240 Flower Dr., Folsom, Calif. 95630

Filed Jun. 25, 1984, Ser. No. 623,921
Int. Cl.[4] G01S *1/14, 1/16, 1/18*
U.S. Cl. 343—414 **23 Claims**



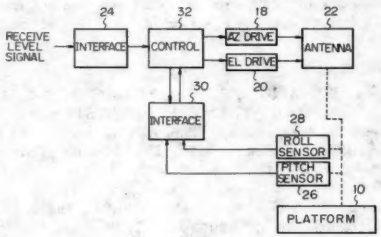
1. Apparatus for use in an instrument landing system (ILS) localizer or glide-slope receiver for deriving actual course deviation, said apparatus comprising:
means for filtering a detected incoming ILS signal in order to extract first and second navigation signals therefrom,
means for synthesizing a first stream of timing pulses phase-locked to said first navigation signal and a second stream of timing pulses phase-locked to said second navigation signal,
first means for sampling the amplitude of said first navigation signal in response to the occurrence of a first selected pulse in said first stream of timing pulses in order to obtain a sampled value substantially equivalent to the peak amplitude of said first navigation signal,
second means for sampling the amplitude of said second navigation signal in response to the occurrence of a second selected pulse in said second stream of timing pulses in order to obtain a sampled value substantially equivalent to the peak amplitude of said second navigation signal, and
means for combining the sampled values of said first and second navigation signals so as to obtain the difference therebetween and, in response to the difference, producing a signal representing actual course deviation.

4,586,050

AUTOMATIC TRACKING SYSTEM FOR ANTENNA

Takao Kuroda, and Ryuji Shimizu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 15, 1983, Ser. No. 532,606
Claims priority, application Japan, Sep. 17, 1982, 57-141224[U]
Int. Cl.[4] G01S *5/02;* **H04B** *7/185*
U.S. Cl. 343—426 **5 Claims**



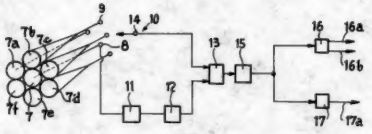
1. An automatic,step tracking antenna system comprising:
an antenna for communicating with a stationary satellite supported on a non stabilized body, which may sway;
azimuth drive means and elevation drive means for driving said antenna in azimuth and elevation, respectively;
drive control means for intermittently driving said azimuth and elevation drive means such that an electric field which the antenna receives from the satellite becomes maximum;
sensor means for sensing a present angle of inclination when said body sways, said sensor means comprising a pitching sensor responsive to a pitching angle of the body and a rolling sensor responsive to a rolling angle of the body; and
control means for storing an angle of a previous inclination of said body which occurred during a non-driven period of the intermittently driven azimuth and elevation drive means, for comparing said stored angle of said previous inclination with the present angle of inclination sensed by the sensor means, and, if a difference provided by the comparison is larger than a predetermined value, for causing the drive control means to resume the operation of the azimuth and elevation drive means even when the azimuth and elevation drive means are in a non-driven period.

4,586,051

REFLECTOR DISTORTION COMPENSATION SYSTEM FOR MULTIPLE-BEAM WAVE SATELLITE ANTENNAS

Antonio Saitto, and Giovanni Mica, both of Oegstgeest, Netherlands, assignors to Agence Spatiale Europeenne, Paris, France

Filed Feb. 28, 1983, Ser. No. 470,538
Claims priority, application France, Mar. 10, 1982, 82 04043
Int. Cl.[4] H01Q *19/10*
U.S. Cl. 343—703 7 Claims



1. A reflector distortion compensation system for multibeam antennas, and comprising:

a reflector and at least one beam forming network having a symmetrical arrangement of peripheral feeds around a central feed;

means for detecting distortions in said reflector, said detecting means comprising a remote transmitter providing a transmit signal to said feeds via said reflector and such that rays of said transmit signal are substantially parallel with each other when arriving at said reflector, a circuit having one input connected to said central feed and another input selectively switchable between at least two of said peripheral feeds in order to obtain linear and non-linear error signals from said circuit in response to corresponding linear and non-linear distortions;

means for generating linear and non-linear distortion correction signals in response to said error signals; and

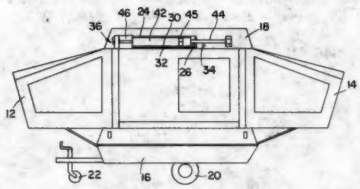
means for correcting said linear and non-linear distortions of said reflector by correcting an attitude of said reflector and characteristics of said beam forming network as required.

4,586,052

MOUNTING SYSTEM FOR ANTENNA FOR POP-TOP CAMPING TRAILERS

Chester G. Liley, 17108 Southport Dr., Holly, Mich. 48442

Filed Mar. 25, 1985, Ser. No. 715,667
Int. Cl.[4] H01Q *1/32*
U.S. Cl. 343—713 5 Claims



1. An antenna mounting system for a pop-top trailer having a rigid cap, comprising;

a mounting plate for the antenna;

means for mounting said plate pivotally on one side of the cap;

an end notch portion formed in one end of the plate;

a side notch portion formed in the lower side of side plate;

and a first stud mounted on and extending from said side of the cap and located in a radial path with said end notch portion for engaging it and thus holding the mounting plate and the antenna in an upright position;

said side notch portion engagable with a second stud fixed to said cap and extending outwardly from said cap side in the down position of the mounting plate and the antenna;

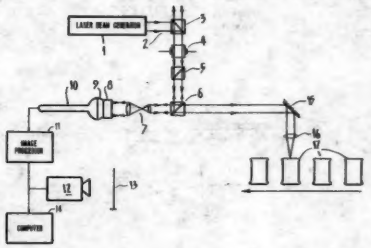
and means for fastening said antenna to said mounting plate.

4,586,053

LASER BEAM PRODUCT MARKING SYSTEM

John L. Hughes, Canberra, Australia, assignor to Australian Electro Optics Pty. Limited, Canberra, Australia

Filed May 16, 1984, Ser. No. 610,715
Claims priority, application Australia, May 18, 1983, PF9408
Int. Cl.[4] G01D *9/00, 9/42*
U.S. Cl. 346—1.1 10 Claims



1. A method for marking objects with an image displayed on an incoherent optical display device, comprising the steps of:

optically coupling said image into a liquid crystal light valve;

directing a polarized laser beam into said liquid crystal light valve thereby superimposing said image onto said polarized laser beam;

extracting those portions of said laser beam whose polarization was affected by the liquid crystal light valve; and

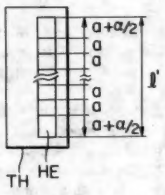
irradiating said object with the part of said laser beam which has been extracted by said extracting step, thereby marking said image onto said object.

4,586,054

RECORDING HEAD

Kenji Kurita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1983, Ser. No. 489,945
Claims priority, application Japan, May 17, 1982, 57-71737[U]
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—76 PH 5 Claims



1. A recording head for recording information in a line of predetermined width in one scan of the recording head, comprising:

a plurality of first recording elements arranged in a substantially linear row; and

two second recording elements, each disposed at an end of said row, for recording in the same line as said first recording elements, wherein the dimension of said second re-

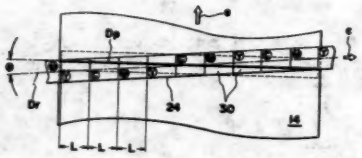
cording elements measured along said row differs from the dimension of each said first recording element measured along said row.

4,586,055

METHOD AND APPARATUS FOR PRINTING COLORED PATTERNS

Keiichi Matsushima, Yokohama, Japan, assignor to Aimor Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1984, Ser. No. 675,393
Claims priority, application Japan, Apr. 17, 1984, 59-077052
Int. Cl.[4] G01D *15/10*
U.S. Cl. 346—76 PH 27 Claims



1. A method of printing dots of at least two different colors, the at least two different colors including first and second colors, on a record sheet with use of a printing head having a multiplicity of heater elements which are arranged in an array extending along a substantially straight print line and which are operative to produce heat independently of one another and an elongated heat-sensitive ink ribbon intervening between the record sheet and the array of said heater elements and lengthwise extending generally in parallel with said print line, the ink ribbon having a series of recurrent colored sections which occur successively in a single row lengthwise of the ribbon and which are contiguous to one another, said color sections being inked in said colors, the colored sections of said first and second colors occuring, lengthwise of the ink ribbon, successively and recurrently with a unit series including one colored section of the first color and one colored section of the second color so that the colored sections of the ink ribbon extending along the print line at any point of time include colored sections of all the at least two, all the colored sections of the ink ribbon having a predetermined length, the method having a succession of line forming cycles each for forming a single line of dots in at least one of said different colors on the record sheet, each of the line forming cycles consisting of a predetermined number of plurality of dot printing steps, comprising

driving the record sheet to advance a predetermined distance across said print line in a direction substantially perpendicular to the print line during each line forming cycle;

driving said ink ribbon to travel with respect to said printing head in a predetermined direction which is generally parallel with but angled at a small angle to said print line so that each of the color sections of said ink ribbon is located in registry with a plurality of heater elements of said printing head during each dot printing step;

providing control signals from an external source and on the basis of said control signals, selecting out of said heater elements of the printing head the heater elements to be actuated to generate heat during each dot printing step; and

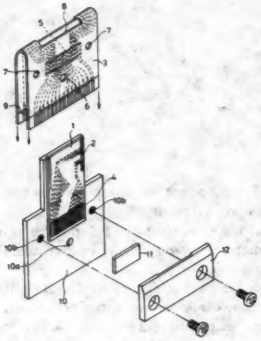
actuating the selected heater elements for producing dots of at least one of said colors on said ink ribbon during each dot printing step.

4,586,056

THERMAL HEAD

Yasushi Okamura; Kiichirou Tanaka, and Hideo Fujino, all of Fukuoka, Japan, assignors to Matsushita Electric Industrial Co., Inc., Kadoma, Japan

Filed Jul. 13, 1984, Ser. No. 630,528
Claims priority, application Japan, Jul. 15, 1983, 58-129734
Int. Cl.[4] G05D *15/06*
U.S. Cl. 346—76 PH 13 Claims



1. A thermal head assembly comprising:

a head base having a shape of wider under part and a narrow upper part;

a head chip located on said upper part of said head base having a first connecting portion;

a plurality of heating elements fixed on said head chip;

a folded flexible printed circuit sheet having a second connecting portion disposed on an inside face of said folded flexible printed circuit sheet for connection to said first connecting portion, said printed sheet having an aperture for insertion of said narrow upper part of said head base therethrough; and

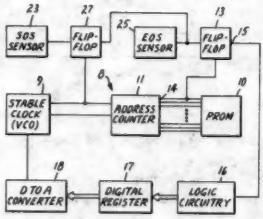
external connecting terminals disposed on an outside face of said folded flexible printed sheet.

4,586,057

COMPENSATION CIRCUITRY FOR A LASER PRINTER USING A SELF-RESONANT SCANNER

David J. Schoon, North Branch, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1984, Ser. No. 589,772
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 4 Claims



1. Circuitry for altering the frequency of a clock generator that provides clock signals during each scan line of a laser printer for use in the generation of data clock signals for a laser printer having a self-resonant scanner wherein the laser printer provides a start of scan (SOS) signal and an end of scan (EOS) signal for each scan line with an address counter used in the

generation of the data clock signals and connected for receiving the clock signals provided between occurrence of an SOS signal and the occurrence of an EOS signal including:

a voltage controlled oscillator (VCO) as the clock generator;

a digital to analog means connected to the control input of said VCO;

a flip-flop circuit connected for receiving each EOS signal and connected to a higher order bit output of the address counter, said flip-flop providing a first signal if the transition in state at said higher order bit output has not occurred when the EOS signal is presented and providing a second signal if the transition in state at said higher order bit output has occurred when the EOS signal is presented;

logic circuitry connected to said flip-flop circuit for receiving said first and second signals and connected to said digital to analog means for providing the digital input to said digital to analog means, said logic circuitry changing the digital input to increase the frequency of the VCO when said flip-flop produces said first signal and decreasing the frequency of the VCO when said flip-flop produces said second signal.

4,586,058

INK JET PRINTING APPARATUS

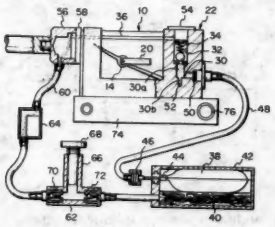
Hiroshi Yamazaki; Takuro Isayama, both of Tokyo; Minoru Ameyama, Yokohama; Shuzo Matsumoto, Yokohama, and Yasuo Katano, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 13, 1984, Ser. No. 640,126

Claims priority, application Japan, Aug. 15, 1983, 58-148927

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R **11 Claims**



1. An ink jet printing apparatus having a function of discharging bubbles which are introduced into ink supplied from a source of ink supply, comprising:

head support means formed with an ink supply path which includes an upward passageway and a downward passageway for branching a stream of the ink from the source of ink supply upwardly and downwardly, respectively;

bubble trapping means located in said head support means and disposed in said upward passageway for trapping bubbles introduced into the ink in said upward passageway;

a head formed with a plurality of nozzles to which the ink flowing through the downward passageway is supplied; and

bubble discharge channel means located in said head for guiding and discharging the bubbles trapped by said bubble trapping means.

4,586,059

COLLECTED TONER CONVEYING DEVICE OF ELECTROSTATIC RECORDING APPARATUS

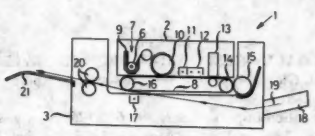
Yozo Matsuura, Machida, Japan, assignor to Richo Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,510

Claims priority, application Japan, Nov. 25, 1982, 57-205453

Int. Cl.[4] G01D *15/06*

U.S. Cl. 346—153.1 **1 Claim**



1. In an electrostatic recording apparatus comprising a latent image carrier formed thereon with a toner image by an electrostatic photography process which is printed by transfer-printing on a transfer-printing sheet, and a cleaning member for removing from said latent image carrier and collecting toner remaining thereon after the toner image is printed on the transfer-printing sheet, a collected toner conveying device comprising:

a toner receiver of a semicircular cross section in its lower portion which extends in a direction perpendicular to the direction of travel of said latent image carrier for receiving the toner removed from the latent image carrier by the cleaning member; and

a screw conveyor provided with spiral fins mounted on a shaft of the screw conveyor with no gap therebetween and located along the entire length of the screw conveyor and rotating in the toner receiver to discharge the toner introduced into the toner receiver to the outside;

wherein an upper unit of the apparatus including the toner receiver tilts in an axial direction of the screw conveyor;

wherein the lower halves of said spiral fins of said screw conveyor are in contact with the inner surface of semicircular cross section of the toner receiver with substantially no gap therebetween; and

wherein said screw conveyor has its velocity of rotation, the radius of the spiral fins and the pitch of the spiral fins set in such a manner that when the velocity at which the toner is recovered to the toner receiver, the radius of the spiral fins, the number of revolutions of the screw conveyor and the pitch of the spiral fins are denoted by v (cm/minute), r (cm), N (RPM.) and P (cm) respectively, the following relationship holds:

$$2v/\pi r^2 < NP.$$

4,586,060

MICROENCAPSULATION PROCESS MULTI-WALLED MICROCAPSULES, TRANSFER SHEET RECORD MATERIAL AND ITS PRODUCTION

Anthony E. Vassiliades, 8738 Tanager Woods Dr., Cincinnati, Ohio 45242

Continuation of Ser. No. 173,303, Jul. 29, 1980, abandoned. This application Jul. 14, 1983, Ser. No. 513,698

Int. Cl.[4] B01J *13/02*; B41M *3/12, 5/16*

U.S. Cl. 346—215 **34 Claims**

25. A transfer sheet record material comprising a cellulosic substrate coated on at least a portion of one surface thereon with multi-walled microcapsules comprising encapsulated material surrounded by substantially impermeable walls, one consisting essentially of an amphiphilic polymeric agent coupled by means of a coupling agent to at least one polymeric substance to form substantially impermeable multiple walls about said material, said coupling agent capable of reacting with said amphiphilic polymeric agent and said at least one

polymeric substance and being oil-soluble urea-formaldehyde resins, oil-soluble melamine-formaldehyde resins, polyisocyanates, oil-soluble polyfunctional amines, or polyfunctional phenols at least one of said polymeric agent and polymeric substance being a proteinaceous polymer and said encapsulated material being a chromogenic dye or an acidic reactant capable of reacting with said dye to develop a color.

4,586,061

THERMALLY-RESPONSIVE RECORD MATERIAL

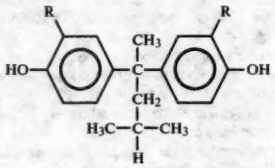
Kenneth D. Glanz, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 670,106, Nov. 9, 1984, abandoned. This application May 13, 1985, Ser. No. 733,016

Int. Cl.[4] **B41M** *5/18*

U.S. Cl. 346—216 **7 Claims**

1. A thermally-responsive record material comprising a support member bearing a thermally-sensitive color-forming composition comprising chromogenic material and a bisphenol compound of the structure



, wherein R is a 1–4 carbon alkyl radical,
which produces a change in color of said chromogenic material by reacting with the chromogenic material when heated.

4,586,062

MICROCIRCUITS FORMED FROM SUBSTRATES OF ORGANIC QUASIUNIDIMENSIONAL CONDUCTORS

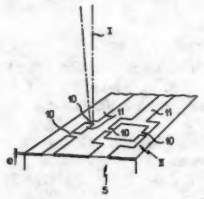
Serge J. H. Bouffard, Chatenay Malabry; Libéro Zuppiroli, Paris; Denis Jerome, Jouy en Josas, all of France, and Klaus Bechgaard, Copenhague, Denmark, assignors to Centre National de la Recherche Scientifique, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,673

Claims priority, application France, Feb. 23, 1982, 82 02954

Int. Cl.[4] **H01L** *39/22, 29/28, 29/161, 39/02*

U.S. Cl. 357—5 **3 Claims**



1. A microcircuit for use at temperatures below 77° K. comprising a substrate comprising $\Delta^{2,2}$ bi-4,5-dimethyl-1,3-diselenolylidene-2,5-dimethyl-7,7'-8, 8'-tetra-cyanoquino dimethane, the substrate having an alternating pattern of superconducting regions and insulating regions thereon said superconducting and insulating regions forming a series of Josephson junctions.

4,586,063

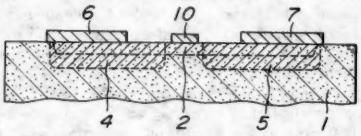
SCHOTTKY BARRIER GATE FET INCLUDING TUNGSTEN-ALUMINUM ALLOY

Hiroshi Nakamura; Katsuzo Kaminishi; Toshio Nonaka, and Toshimasa Ishida, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,873

Int. Cl.[4] **H01L** *29/48, 29/80, 23/48, 29/56*

U.S. Cl. 357—22 **1 Claim**



1. A semiconductor device comprising a GaAs semiconductor body, a source region and a drain region formed by self-alignment technique in the semiconductor body, a channel region placed between the source and drain regions, a source electrode and a drain electrode provided by patterning treatment onto the surfaces of the source and drain regions and making ohmic contact thereto, and a gate electrode provided onto the surface of the channel region, the gate electrode consisting of a W-Al alloy, the W-Al alloy having a composition of Al of 0.5 to 3 atom % and W of the residue.

4,585,064

DMOS WITH HIGH-RESISTIVITY GATE ELECTRODE

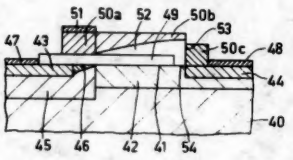
Leonard J. M. Esser; Hermanus J. H. Wilting, and Eduard F. Stikvoort, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,446

Claims priority, application Netherlands, Oct. 6, 1982, 8203870

Int. Cl.[4] **H01L** *29/78, 29/04, 27/04, 29/40*

U.S. Cl. 357—23.4 **3 Claims**



1. A semiconductor device comprising an element of the MIS type having a monocrystalline semiconductor body, one surface of which is provided with a comparatively thin dielectric layer which constitutes a gate dielectric of the MIS element and on which is formed a gate electrode of doped semiconductor material for influencing the surface potential in the semiconductor body, and means for electrically decoupling said gate electrode from said semiconductor body, said means comprising a high-resistivity part of said gate electrode adjoining said gate dielectric and having a sufficiently low doping concentration and a conductivity type such that, during operation of the device, while avoiding breakdown, a depletion layer can be formed which extends from the gate dielectric into the high-resistivity part of said gate electrode, wherein the semiconductor element is an insulated gate field effect transistor of the double diffused type in which the source zone and the channel region are constituted by surface zones of a first and a second, opposite conductivity type, respectively, the zone of the second conductivity type at least partly surrounding the zone of the first conductivity type and being separated from the drain zone of the first conductivity type by an inter-

mediate comparatively high-resistivity drift region, and the gate electrode comprises a weakly doped part of the second conductivity type which lies above the drift region of the transistor, said weakly doped part of the gate electrode being connected through a rectifying p-n junction to the drain region of the transistor.

4,586,065

MNOS MEMORY CELL WITHOUT SIDEWALK

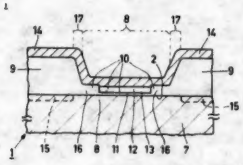
Hans R. Neukomm, Thalwil, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 7, 1983, Ser. No. 464,456

Claims priority, application Netherlands, Feb. 25, 1982, 8200756

Int. Cl.[4] H01L *29/78*; G11C *11/40*

U.S. Cl. 357—23.5 **8 Claims**



1. A semiconductor device comprising a semiconductor body having at least a storage site with an insulated gate electrode, the semiconductor body having a surface contiguous to at least an electrode region which serves as an electrode and forms a rectifying junction with a semiconductor region of a first conductivity type common to the electrode region and the storage site, the electrode region, viewed on the surface, being contiguous to an active semiconductor region which has a boundary which is defined for a first part by the adjoining electrode region and for at least a further part by a thick insulating layer serving as field insulation, a thin insulating layer being present on the active region, said thin insulating layer comprising at least a first and a second sublayer, the second sublayer being separated by the first sublayer from the active region, and a boundary layer being present adjacent the interface between the first and the second sublayer, in which boundary layer charge can be stored which determines the information content of the storage site, a gate electrode isolated from the active region extending over the sublayers, which gate electrode extends at the further part of the boundary of the active region defined by the field insulation to above the field insulation, characterized in that the boundary layer for charge storage has an extension beneath said gate electrode in a direction toward said further part of said boundary which is limited to a region which is smaller than the active region and is located at a distance from the further part of the boundary of the active region defined by the field insulation, the gate electrode extending between this further part of the boundary and the region occupied by the boundary layer over a part of the thin insulating layer in which no boundary layer for charge storage is present.

4,586,066

AVALANCHE PHOTODETECTOR

Robert J. McIntyre, Pointe-Claire, Canada, assignor to RCA Inc., Toronto, Canada

Filed Sep. 14, 1984, Ser. No. 650,681

Claims priority, application Canada, Apr. 10, 1984, 451681

Int. Cl.[4] H01L *27/14, 31/00, 29/90*

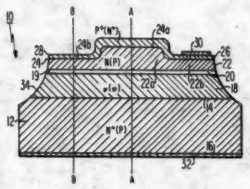
U.S. Cl. 357—30 **5 Claims**

1. An avalanche photodetector comprising:

a substrate of first conductivity type having a first major surface;

a light-absorptive region of first conductivity type overlying said first major surface;

a first region of first conductivity type overlying said absorptive region and having a central zone and a surrounding peripheral zone wherein said central zone is thicker than said peripheral zone;



a second region of opposite conductivity type overlying said first region;

a first electrical contact to said second region; and

a second electrical contact to said substrate.

4,586,067

PHOTODETECTOR WITH ISOLATED AVALANCHE REGION

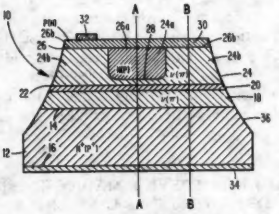
Paul P. Webb, Beaconsfield, Canada, assignor to RCA Inc., Toronto, Canada

Filed Sep. 14, 1984, Ser. No. 650,680

Claims priority, application Canada, Apr. 10, 1984, 451682

Int. Cl.[4] H01L *27/14, 31/00*

U.S. Cl. 357—30 **10 Claims**



1. An avalanche photodetector for operation of a particular wavelength comprising:

a substrate of first conductivity type having a first major surface;

a light-absorptive region of first conductivity type which overlies the first major surface;

a first region of first conductivity type overlying said absorptive region and having a surface including a central surface area and a surrounding peripheral surface area;

a zone extending a distance from said central area towards said absorptive region and having a higher conductivity than the remainder of the first region;

a second region of opposite conductivity type overlying the first semiconductor region;

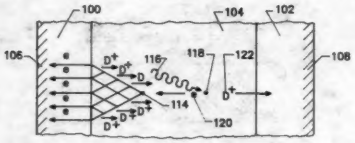
a first electrical contact overlying said second region; and

a second electrical contact to said substrate.

4,586,068
SOLID STATE PHOTOMULTIPLIER

Michael D. Petroff, Fullerton; Maryn G. Stapelbroek, and William A. Kleinhans, both of Santa Ana, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 7, 1983, Ser. No. 539,878
Int. Cl.[4] H01L *27/14, 31/00*
U.S. Cl. 357—30 **34 Claims**



1. A solid state photon detector for operation under an applied electrical bias, comprising:

a first semiconducting region with first and second conductivity type impurity concentrations which are low enough that substantially no charge transport occurs by an impurity conduction mechanism;

a second semiconducting region with a first conductivity type impurity concentration which is high enough to create an impurity energy band and with a second conductivity type impurity concentration which is high enough that first conductivity type carriers injected into said region recombine with ionized first conductivity type impurities;

a third semiconducting region between said first and second regions with a first conductivity type impurity concentration which is high enough to create an impurity energy band and a second conductivity type impurity concentration which is low enough that first conductivity type carriers which are photogenerated in said third region can drift through said region without recombining with ionized first conductivity type impurities;

a first electrical contact in contact with the first region for collecting first conductivity type carriers without injecting second conductivity type carriers; and

a second electrical contact in contact with said second region for collecting carriers from said impurity band,

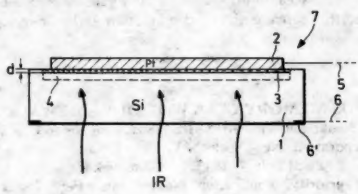
said electrical bias being applied between said contacts to raise the electric field in at least the portion of said third region adjacent said first region above the threshold for impact ionization of first conductivity type impurities.

4,586,069
OPTO-ELECTRICAL DEVICE MADE OF SILICON FOR DETECTING INFRARED LIGHT

Max Königer, Munich, and Gerhard Müller, Eglharting, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft-mit-beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,491
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3234096
Int. Cl.[4] H01L *27/14, 31/00*
U.S. Cl. 357—30 **6 Claims**

1. An opto-electrical apparatus for detecting infrared light, comprising a Schottky-barrier device including at least one detector element including a substrate (1) of p-type silicon, a metal layer (2) having a given work function on one surface of said p-type silicon substrate (1), and a p^+-silicon doped intermediate barrier (3) between said p-type silicon substrate (1) and said metal layer (2), said intermediate barrier (3) having a doping density or concentration within the range of 5×10^{18} to 5×10^{19} atoms per cm^3 and a thickness (d) within the range of 50 to 200 Angstroems, said intermediate barrier further having a barrier height ϕ=0.10 to 0.15 eV, whereby the device is

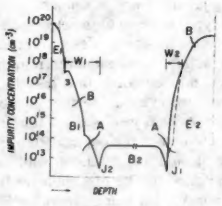


capable of detecting infrared radiation in the range of about 8 to 12 microns.

4,586,070
THYRISTOR WITH ABRUPT ANODE EMITTER JUNCTION

Tsutomu Nakagawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 498,687, Jun. 1, 1983, abandoned, which is a continuation of Ser. No. 175,865, Aug. 6, 1980, abandoned. This application Mar. 5, 1985, Ser. No. 707,549
Claims priority, application Japan, Aug. 7, 1979, 54-100988
Int. Cl.[4] H01L *29/74*
U.S. Cl. 357—38 **3 Claims**



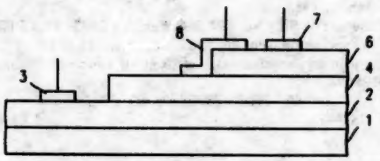
1. In a thyristor which comprises a first conductive type first emitter layer, a second conductive type first base layer, a first conductive type second base layer and a second conductive type second emitter layer in adjacent order between one main surface and the other main surface of a semiconductor substrate, wherein an exposed surface of a first junction formed by said second emitter layer and said second base layer on the side surface of said semiconductor substrate is in positive bevel and an exposed surface of a second junction formed by said first base layer and said second base layer is in negative bevel, an improvement wherein said second emitter layer has a first portion extending from said first junction toward said other main surface which has a distribution of impurity concentration less than an impurity concentration of said first base layer near a third junction formed by said first emitter layer and said first base layer, wherein said first portion of said second emitter layer has a thickness defined by the distance from said first junction to the depth at which said second emitter layer has an impurity concentration equal to the impurity concentration of said first base layer near said junction and wherein said thickness is smaller than the thickness of said first base layer and wherein said first base layer has two different impurity concentration profiles formed by double diffusion, and whereby a curve of the impurity concentration of said thyristor is such that the slope of the distribution of impurity concentrations of said first base layer near said second junction is smaller than the slope of the distribution of impurity concentrations of said second emitter layer near said first junction.

4,586,071

HETEROSTRUCTURE BIPOLAR TRANSISTOR

Sandip Tiwari, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1984, Ser. No. 609,406
Int. Cl.[4] H01L *29/72*
U.S. Cl. 357—34 4 Claims



1. In a heterojunction bipolar transistor, the improvement comprising:

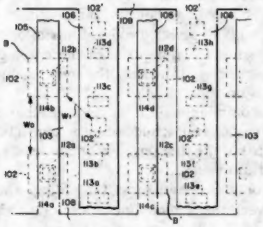
a metal electrode positioned in contact with the base region and at least one of the collector and emitter regions, said electrode being of a metal selected with respect to the base region and the adjacent collector or emitter region such that an ohmic contact is provided to the base and a Schottky barrier contact is provided to the adjacent region.

4,586,072

BIPOLAR TRANSISTOR WITH MESHED EMITTER

Yasutaka Nakatani, Yokohama, and Isamu Kuryu, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 28, 1982, Ser. No. 402,425
Claims priority, application Japan, Jul. 28, 1981, 56-118154
Int. Cl.[4] H01L *29/72*
U.S. Cl. 357—34 6 Claims



1. A semiconductor device, comprising:

a collector substrate region having a first conductivity type;

a base region formed in said collector region, and having a second conductivity type; and

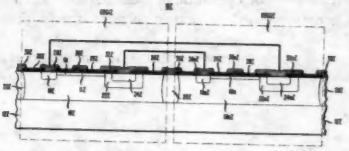
a mesh emitter region, of the first conductivity type, formed in said base region so that a plurality of first portions of the base regions are exposed by the mesh emitter region, and having a plurality of intersections defined by said mesh emitter region, each intersection having a center, said centers of said intersections in said mesh emitter region being made substantially electrically inactive.

4,586,073

HIGH VOLTAGE JUNCTION SOLID-STATE SWITCH

Adrian R. Hartman, New Providence; Bernard T. Murphy, Summit, both of N.J.; Terence J. Riley, Wyomissing, Pa., and Peter W. Shackle, West Melborne, Fla., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 107,773, Dec. 28, 1979, which is a continuation-in-part of Ser. No. 971,886, Dec. 20, 1978, abandoned. This application Mar. 27, 1981, Ser. No. 248,205
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—45 24 Claims



1. A structure comprising:

a semiconductor body having a bulk region of one conductivity type contiguous with a top major surface of the body;

a localized first region of the body which is of the one conductivity type;

a localized second region of the body which is of the opposite conductivity type;

the localized first and second regions are both of relatively low resistivity as compared with that of the bulk region and are both surrounded by portions of the bulk region;

each of the first and second regions having a portion that forms part of the top major surface and having a separate electrode coupled thereto;

a third region of the body which underlies the bulk region, the third region having a conductivity type which is opposite the first type and having a top surface which is at least partly common with a bottom surface of the bulk region, said third region having a separate electrode coupled thereto;

the parameters of the structure being such that when the first region is forward biased with respect to the second region and the potential of the third region is insufficient to essentially completely deplete a cross-sectional portion of the bulk region then a substantial current flow is established between the first and second regions via the bulk region, and when the first region is forward biased with respect to the second region and the potential of the third region is sufficient to essentially completely deplete a cross-sectional portion of the bulk region and to cause the potential of this portion to be greater in magnitude than that of the first region then substantially interrupting (cut off) of said current flow between the first and second region is facilitated; and

the third region being separated from the first and second regions by a portion of the bulk region.

4,586,074

IMPURITY BAND CONDUCTION SEMICONDUCTOR DEVICES

Maryn G. Stapelbroek, Santa Ana, and Michael D. Petroff, Fullerton, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 15, 1983, Ser. No. 532,332
Int. Cl.[4] H01L *29/12*
U.S. Cl. 357—58 18 Claims

1. A semiconductor diode for operation at a temperature such that the thermal generation of free charge carriers is negligible, comprising:

a first semiconducting region with a sufficient concentration

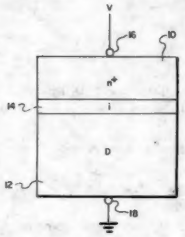
of first conductivity type impurities to exhibit metallic type conductivity;

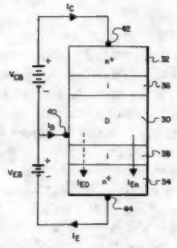
a second semiconducting region with a sufficient concentration of first conductivity type impurities to create an impurity energy band and with a second conductivity type impurity concentration less than half said first type concentration; and

a blocking region between said first and second regions with a sufficiently low impurity concentration that substantially no charge transport can occur by an impurity conduction mechanism.

11. A transistor for operation at a temperature such that the thermal generation of free charge carriers is negligible, comprising:

a semiconducting collector with a sufficient concentration of





first conductivity type impurities to exhibit metallic type conductivity;

a semiconducting base with a sufficient concentration of first conductivity type impurities to create an impurity energy band and with a second conductivity type impurity concentration less than half said first type concentration;

a semiconducting emitter with a sufficient concentration of first conductivity type impurities to exhibit metallic type conductivity;

a first blocking region interposed between said base and said collector; and

a second blocking region interposed between said base and said emitter,

said blocking regions having sufficiently low impurity concentrations that substantially no charge transport can occur by an impurity conduction mechanism.

4,586,075

SEMICONDUCTOR RECTIFIER

Siegfried Schwenk; Andreas Hössler; Klaus Heyke, all of Reutlingen, and Alexander Wallrauch, Gomaringen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

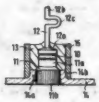
PCT No. PCT/DE82/00128, § 371 Date Feb. 22, 1983, § 102(e) Date Feb. 22, 1983, PCT Pub. No. WO83/00074, PCT Pub. Date Jan. 6, 1983

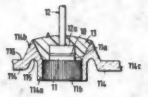
Continuation of Ser. No. 474,586, Feb. 22, 1983. This PCT application Jun. 16, 1982, Ser. No. 716,472

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1981, 3124692.3

Int. Cl.[4] H01L *23/28, 23/02, 23/36*

U.S. Cl. 357—74 **9 Claims**





1. A semiconductor rectifier comprising

a rotation-symmetrical semiconductor chip (**10**) of essentially plate form having a first major surface and a second major surface;

a first rotation-symmetrical terminal (**11**) having a first portion (**11***a*) soldered to the first major surface of the chip, and a second portion (**11***b*) defining a rotation-symmetrical bolt-like solid metal element;

a second terminal (**12**) secured to the second major surface of the chip;

a cooling plate (**14**) formed with a circular opening therein, in which said solid metal element of said second portion (**11***b*) of the first terminal (**11**) is seated;

the region of the cooling plate (**14**) surrounding said opening being formed with an integral bead or rim or collar ((**14***a*) projecting from a major plane of the cooling plate, and leaving an opening of at least the inner diameter of said bead or rim or collar;

a cylindrical confining wall or jacket (**15**) surrounding, with clearance space, said semiconductor chip (**10**), said first portion (**11***a*) of the first terminal and at least part (**12***a*) of the second terminal;

a poured synethetic resin mass (**13**) filling the clearance space between the semiconductor chip (**10**), the first portion (**11***a*) of the first terminal (**11**) and the at least part (**12***a*) of the second terminal, and an inner surface of said confining wall or jacket;

wherein the second portion (**11***b*) of the first terminal (**11**) is formed with a knurled surface and pressed into said opening, and into said bead or rim or collar to be gripped thereby,

said bead or rim or collar extending essentially over the axial extent of said solid metal element forming the second portion (**11***b*) of the first terminal, and terminating approximately at a level of the junction of the first and second portions (**11***a*, **11***b*) of the first terminal;

and wherein the cylindrical confining wall or jacket comprises a separate cylindrical element (**15**) fitted about the

outer circumference of said bead or rim or collar (14) formed in the cooling plate.

4,586,076

SCANNER OPTICS FOR CONTAINING SCATTERED LIGHT

Peter B. Watt, Welwyn, England, assignor to Eastman Kodak Company, Rochester, N.Y.

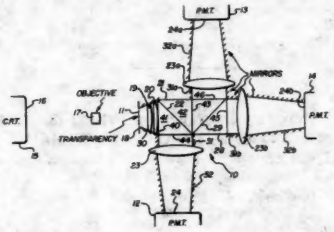
PCT No. PCT/GB83/00037, § 371 Date Sep. 26, 1983, § 102(e) Date Sep. 26, 1983, PCT Pub. No. WO83/02869, PCT Pub. Date Aug. 18, 1983

PCT Filed Feb. 9, 1983, Ser. No. 556,235

Claims priority, application United Kingdom, Feb. 12, 1982, 8204083

Int. Cl.[4] H04N *1/46, 9/04, 5/257, 1/028*

U.S. Cl. 358—75 4 Claims



1. An optical scanner for scanning a color transparency with a beam of light, said scanner comprising:

means for generating a scanning light beam;

a gate for locating the color transparency in the path of the scanning light beam;

a beam splitter located in spaced relationship to said gate for receiving light transmitted by the transparency and for separating the received light into a plurality of separate light components having different spectral characteristics, said beam splitter including an entrance for receiving the transmitted light and a plurality of exits through which the spectrally-different components are transmitted;

a plurality of photoresponsive devices each located in spaced relationship to a respective exit of said beam splitter;

internally reflective path defining means for enclosing an optical path between said gate the entrance of said beam splitter; and

means for containing and directing each spectrally-different component from an exit of said beam splitter to a respective photoresponsive device.

4,586,077

SWITCHED SURFACE ACOUSTIC WAVE APPARATUS FOR CONTROLLING CABLE TELEVISION SERVICES

James W. Wonn, Hempfield Township, Mercer County, and Bruce R. McAvoy, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 6, 1984, Ser. No. 618,009

Int. Cl.[4] H04N *7/10, 7/16;* H03H *9/72*

U.S. Cl. 358—86 7 Claims

1. Apparatus for selectively switching one or more signals of a multisignal input as output signals, comprising:

a source for generating a multisignal transmission,

a signal selector means having said multisignal transmission as an input, and an output,

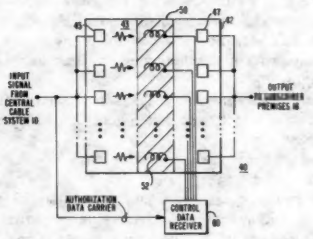
said signal selector means including a multichannel surface acoustic wave guide means having a piezoelectric substrate, each channel including spaced-apart surface acoustic wave transmitting and receiving transducers affixed thereto and a metallic film disposed on the surface of said piezoelectric substrate intermediate said transmitting and receiving transducers, and magnetic field generators operatively coupled to the thin film associated with each of said channels, said transducers being responsive to a predetermined signal of said multisignal transmission,

said film and field generator serving as switch means associated with each of said channels intermediate said transmitting and receiving transducers to selectively permit transmission of a predetermined signal from said transmitting to said receiving transducer, and

control means operatively connected to said magnetic field generators for selectively activating the switch means of the respective channels to select predetermined signals of said multisignal transmission for transmission between the respective transmitting and receiving transducers, the output signals of said receiving transducers being the output of said signal selector means wherein said magnetic field generators are coil elements, said control means selectively supplying current signals to said coil elements to control the acoustic wave transmission between said transmitting and receiving transducers of the respective channels via magnetic fields.

3. Apparatus for selectively providing one or more cable television signals, or groups of signals, to one or more cable television subscriber premises, comprising:

a multichannel surface acoustic wave guide means including a piezoelectric substrate having as an input a multisignal


INPUT SIGNAL FROM CENTRAL CABLE SYSTEM 10
OUTPUT TO SUBSCRIBER PREMISES 16
AUTHORIZATION DATA CARRIER
CONTROL DATA RECEIVER

cable television transmission, and an output, each channel including spaced-apart surface acoustic wave transmitting and receiving transducers affixed to said substrate, said transducers being responsive to a predetermined electrical signal of said cable television transmission, said transmitting transducers converting said electrical signal into an acoustic wave signal for transmission to said spaced-apart receiving transducer, said receiving transducer converting said acoustic wave signal to said electrical signal,

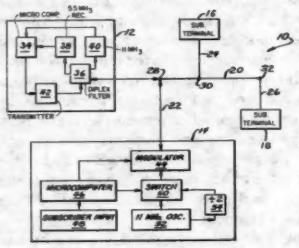
switch means intermediate the transmitting and receiving transducers of the respective channels to provide on-off control of transmissions between the transmitting and receiving transducers of the corresponding channel, the outputs of the receiving transducers comprising the cable television signals available to the subscriber premises as the output of the multichannel surface acoustic wave guide means said switch means including a metallic film disposed on the surface of said piezoelectric substrate intermediate said transmitting and receiving transducers and magnetic field generators operatively coupled to the metallic film associated with each of said channels, said magnetic field generators including coil elements responsive to selectively supplied current signals in order to control the acoustic wave transmission between the transmitting and receiving transducers of the respective channels via magnetic fields.

4,586,078

CATV UPSTREAM SIGNAL TRANSMISSION AT NONHARMONIC VIDEO FREQUENCIES

Richard W. Citta, Oak Park; Gary J. Sgrignoli, and Dennis M. Mutzabaugh, both of Mt. Prospect, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 9, 1983, Ser. No. 560,061
Int. Cl.[4] H04N 7/10, 7/14
U.S. Cl. 358—86 **1 Claim**



1. In a two-way CATV system wherein a plurality of modulated signals each corresponding to a CATV channel and having associated therewith a plurality of carrier frequencies are transmitted downstream in a band between 50–450 MHz on a cable from a headend to a plurality of subscriber terminals at spaced frequency intervals of 6 MHz and wherein modulation products of said downstream modulated signals arising from discontinuities in said cable are coupled upstream to said headend, the improvement wherein each of said subscriber terminals comprises:

means for generating a data signal and a carrier select signal, the carrier select signal being generated independently of the headend;

means for generating a 5.5 MHz carrier signal and an 11 MHz carrier signal;

switch means coupled to said carrier signal generating means, said switch means having an output terminal and being responsive to said carrier select signal for alternately developing said 5.5 MHz and 11 MHz carrier signals at said output terminal;

means coupled to said output terminal for transmitting the data signal upstream to the headend as modulation of said alternately developed 5.5 MHz and 11 MHz carrier signals; and

means at the headend for receiving the transmitted upstream data signals.

4,586,079

FIBERSCOPE DELIVERY SYSTEM

Frank W. Cooper, Jr., Monroeville; Harry N. Andrews, Murrysville, both of Pa., and Matthew J. Randazzo, Tonawanda, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1983, Ser. No. 540,454
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—100 **20 Claims**

1. Apparatus for driving an elongated flexible carrier for carrying a workpiece to and from work areas, said apparatus comprising: a single elongated drive member having rigidity in one plane and being bendable out of said plane, coupling means carried by said single drive member adjacent to one end thereof for releasably coupling said drive member to the associated workpiece carrier, and drive means engageable with said single drive member for effecting longitudinal movement

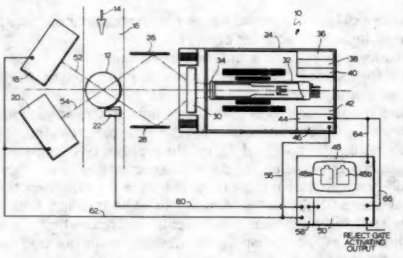
thereof and of the carrier coupled thereto; thereby to drive the carrier and the associated workpiece along a linear path.

4,586,080

METHOD AND APPARATUS FOR VIDEO INSPECTION OF ARTICLES OF MANUFACTURE

Mark Hoyt, and Edward A. Rowe, both of Muncie, Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Mar. 22, 1984, Ser. No. 592,201
Int. Cl.[4] H04N 7/18
U.S. Cl. 358—106 **9 Claims**



1. In a method of optically inspecting an article including the steps of generating a momentary beam of light, directing the momentary beam of light at the article being inspected and further directing the beam of light and an image of the article onto a photoconductive target of a video camera, scanning the photoconductive target with an electron beam to produce a video signal representing the image of the article, and analyzing the video signal to determine flaws in the article, the improvement comprising:

interrupting the video signal from the photoconductive target as generation of the light beam begins, and resuming video signal generation after a short duration to provide a video signal related to the stored image on the photoconductive target of the video camera.

4,586,081

METHOD AND APPARATUS FOR SECURE AUDIO CHANNEL TRANSMISSION IN A CATV SYSTEM

William J. St. Arnaud, and Israel Switzer, both of Toronto, Canada, assignors to Lincoln Center for the Performing Arts, Inc., New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,362
Int. Cl.[4] H04N 7/167, 7/04
U.S. Cl. 358—121 **13 Claims**

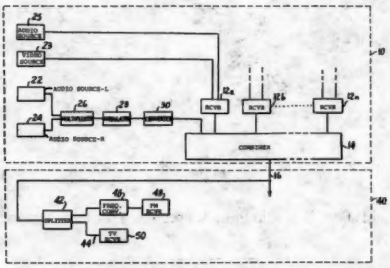
1. A method for the secure transmission of audio information

in a system for the transmission of associated television audio and video information comprising the steps of

picking up the associated audio and video information,

transmitting the video information as a conventional television signal in a conventional television channel,

wherein the audio information is secured by transmitting the



audio information as an FM signal at a radio frequency which is a subharmonic of a frequency in the conventional FM broadcast band and is outside said band, and

receiving the FM signal at a frequency converter and converting the FM signal's frequency to a frequency in the conventional FM radio broadcast band for reception by a conventional FM broadcast band radio receiver.

4,586,082

ERROR CONCEALMENT IN DIGITAL TELEVISION SIGNALS

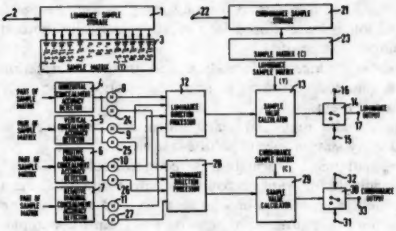
James H. Wilkinson, Tadley, near Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed May 18, 1983, Ser. No. 495,684

Claims priority, application United Kingdom, May 26, 1982, 8215359

Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—160 **24 Claims**



1. A method of concealing errors in a digital television signal, which television signal represents a raster comprising a plurality of component sample signals corresponding respectively to sample positions along horizontal scan lines of a television picture made up of a plurality of such lines, the method comprising, in respect of each said sample signal which is in error:

selecting from a plurality of algorithms a preferred algorithm for correcting said error sample signal;

calculating a correction value for said error sample signal using said preferred algorithm;

substituting said correction value for said error sample signal so as to conceal the error; and

when the density of other error sample signals in the neighborhood of said error sample signal prevents said selection of said preferred algorithm; substituting the sample signal from a position in said raster adjacent to the position of said error sample signal for said error sample signal so as to conceal the error.

4,586,083

GHOST REDUCTION CIRCUIT ARRANGEMENT FOR A TELEVISION RECEIVER

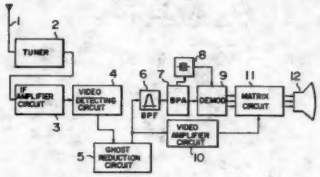
Tomomitsu Kuroyanagi, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1981, Ser. No. 331,280

Claims priority, application Japan, Dec. 22, 1980, 55-180378

Int. Cl.[4] H04N *5/213*

U.S. Cl. 358—167 **3 Claims**



1. A ghost reduction circuit arrangement for a television receiver comprising:

(a) an input terminal to which a television signal containing ghost signal is applied;

(b) a first set of delay elements of m each with a first delay time, which are connected in series, with the input terminal connecting to said input terminal;

(c) a circuit for generating a reference signal on the basis of said television signal, said circuit being connected to said input terminal;

(d) a first comparing circuit for comparing said television signal with said reference signal;

(e) a first set of gain controllable circuits of m for controlling the amplitude and the polarity of the output signals of said delay elements, to which the output signals from said first set of delay elements are applied, respectively;

(f) a gain control voltage generating circuit for controlling gains of said gain controllable circuits and their output signals, on the basis of the output signal from said first comparing circuit;

(g) a first adder circuit for adding the output signals from said first set of gain controllable circuits;

(h) a first subtractor circuit for subtracting an output signal of said first adder from said television signal supplied through said input terminal;

(i) a second set of delay elements of n each with a second delay time connected in series;

(j) a delay signal selection switch for selectively supplying the output signals of said first set of delay elements to the input terminal of said second set of delay elements;

(k) a switch control circuit for controlling said delay signal selection switch on the basis of an output signal voltage from said gain control voltage generating circuit;

(l) a second comparing circuit for comparing said reference signal with said first subtractor circuit;

(m) a second set of gain controllable circuits of n for controlling the amplitudes and the polarity of the output signals from said second set of delay elements provided corresponding to said second set of delay elements;

(n) a second control voltage generating circuit for supplying a signal voltage for controlling the gains and the polarity of said second set of gain controllable circuits to said second set of gain controllable circuits, on the basis of the output signal from said second comparing circuit;

(o) a second adder circuit for adding the output signals of said second set of gain control circuits; and

(p) a second subtracting for subtracting the output signal of

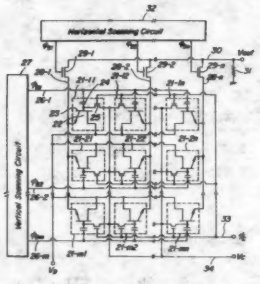
said second adder circuit from the output signal from said first subtractor.

4,586,084

SOLID STATE IMAGE SENSOR

Masaharu Imai, Ina, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1985, Ser. No. 758,790
Claims priority, application Japan, Aug. 15, 1984, 59-169255
Int. Cl.[4] H04N *3/12*
U.S. Cl. 358—212 **14 Claims**



1. A solid state image sensor comprising

a plurality of row lines;

a plurality of column lines;

a plurality of pixels, each pixel comprising a normally-on type static induction transistor having gate, source and drain and a vertical type control transistor having a vertical source-drain passage connected to said gate of static induction transistor, said gate storing photocarriers induced by incident light;

means for scanning the pixels to readout an image signal by selectively making conductive the static induction transistors; and

means for selectively making conductive one or more vertical type control transistors of pixels which are not selected by the scanning means, and for discharging through the source-drain passages of the vertical type control transistors of non-selected pixels excess amounts of stored photocarriers over a pinch-off voltage of the static induction transistors of non-selected pixels.

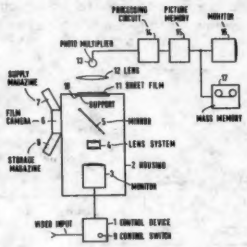
4,586,085

DEVICE FOR TAKING PICTURES FROM A MONITOR

Joerg Haendle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 9, 1983, Ser. No. 530,557
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3234118
Int. Cl.[4] H04N *5/84*
U.S. Cl. 358—244 **1 Claim**

1. In a device for taking pictures from a monitor having a monitor, a lens, a mirror that can be moved within the path of rays of the monitor to select between two different ray paths, and a film camera in one of said ray paths for taking a picture of said monitor, the improvement comprising a transparent holder for a sheet film provided in the other one of said ray paths, a photoelectric detector positioned in light receiving relationship to said holder and capable of generating an output signal corresponding to the received light intensity, a lens provided between said holder and said detector for focusing light received from the entire sheet film surface upon said detector, and a control device for controlling said monitor and said mirror so that said mirror is moved to select one of said ray paths and, when the ray path to said sheet film is selected, a light dot is generated on the screen of the monitor for projection onto said sheet film, said light dot scanning the entire sheet film surface.

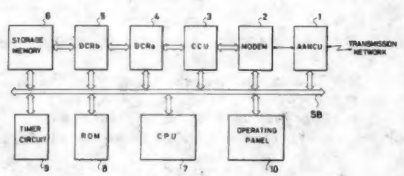


4,586,086

FACSIMILE COMMUNICATION RELAY SYSTEM

Yoshiaki Ohzeki, Atsugi, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jul. 30, 1984, Ser. No. 635,419
Claims priority, application Japan, Jul. 29, 1983, 58-137823
Int. Cl.[4] H04N *1/00, 1/32*
U.S. Cl. 358—256 **4 Claims**



1. A facsimile communication relay method wherein image information to be transmitted from a source station to a destination station is once stored in a relay station, the method comprising the steps of:

transmitting address information and image information from said source station to said relay station to be once stored therein;

returning said address and image information once stored in said relay station to said source station; and

causing said image information stored in said relay station to be available for transmission if a control signal has been supplied from said source station to said relay station within a predetermined time period as from the completion of said returning step or to carry out a predetermined operation if said control signal has not been supplied from said source station to said relay station within said predetermined time period.

4,586,087

CATHODE RAY TUBE MOUNTING SYSTEM

John M. Parsons, Portsmouth, Va.; Raymond L. Smith, San Jose, Calif., and James A. Wynn, Jr., Virginia Beach, Va., assignors to General Electric Company, Portsmouth, Va.

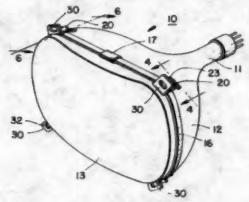
Filed May 31, 1984, Ser. No. 615,642
Int. Cl.[4] A04N *5/65;* H04N *5/645*
U.S. Cl. 358—246 **18 Claims**

1. An improved mounting system for a cathode ray tube to a tube enclosure, comprising:

at least one base bracket member having a foot portion attached to the tube, the said base bracket member having

a tee shaped structure extending at an angle from said foot portion,

a mounting bracket member operatively associated with the base bracket member having an opening therein adapted to receive the tee shaped structure of the base bracket member when in a tee receiving position, and adapted to be rotated to a mounting position, and



means associated with the mounting bracket member for supporting the mounting bracket member against the tee shaped structure when the mounting bracket member is rotated from the tee receiving position to the mounting position.

4,586,088

TRANSMISSION CONTROL SYSTEM FOR FACSIMILE TRANSCEIVER

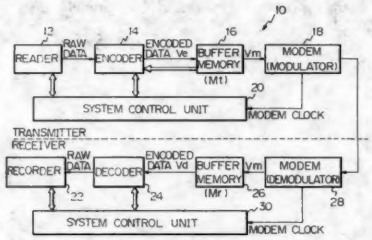
Mitsuru Kondo, Sagamihara, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 30, 1984, Ser. No. 605,081

Claims priority, application Japan, Apr. 28, 1983, 58-75154

Int. Cl.⁴ H04N *1/32*

U.S. Cl. 358—257 **4 Claims**



1. In a transmission control system for a facsimile transceiver comprising a transmitter which has a reader for reading picture information, an encoder for removing redundancy of the picture information, a buffer memory for temporarily storing encoded data, and a receiver having a buffer memory for temporarily storing the encoded data, a decoder for reproducing the redundancy of the encoded data, and a recorder for recording the picture information,

said transmitter comprising:

(a) first control means for performing a control such that a relation $Tsm \geqq Tpm$ holds between a reading interval per line Tsm of the reader and a picture information recording time Tpm per line of the recorder;

(b) fill bit insertion means for inserting fill bits Nf ($Nf \geqq 0$ and integer) line by line in the encoded data such that a relation $Nc+Nf \geqq Vm \times Tdm$ holds between the fill bits Nf inserted line by line in the encoded data, a modem rate Vm of the receiver, and a minimum decode processing time Tdm per line of the decoder; and

(c) second control means for performing a control such that a relation $Tc \geqq (Nc+Nf)/Vd$ holds between an encoding interval per line Tc, a number of bits Nc of encoded data per line, the fill bits Nf to be inserted in the encoded data line by line, and the decoding rate Vd of the decoder;

said transmitter and receiver being controlled such that during a protocol procedure at least the recording time Tpm of the recorder at the receiver, the modem rate Vm, a memory size Mr of the buffer memory of the receiver, the decoding rate Vd of the decoder, and the minimum decode processing time Tdm of the decoder are notified to the transmitter, during transmission of picture information the transmitter causes the first and second control means and said fill bit insertion means to satisfy the respective conditions, upon increase of an amount Mt of encoded data stored in the buffer memory beyond a first reference value M_1 ($M_1 < Mr$) a coding operation is interrupted, upon decrease of the amount Mt of encoded data beyond a second reference value M_2 ($M_2 < M_1$) the coding operation is resumed, and upon decrease of the amount Mt of encoded data beyond a third reference value M_3 ($0 < M_3 < M_2$) a predetermined number of fill bits are inserted.

4,586,089

IMAGE PROCESSOR

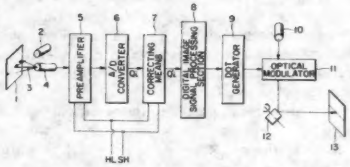
Katsuo Nakazato, Tokyo; Kunio Sannomiya, Kanagawa; Hidehiko Kawakami, Tokyo; Hiroyoshi Tsuchiya; Hiroyoshi Otsuka, both of Kanagawa, and Hideo Uchida, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Matsushita Graphic Communication Systems, Inc., both of Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,952

Claims priority, application Japan, Aug. 18, 1982, 57-143940; Oct. 22, 1982, 57-186439; Oct. 22, 1982, 57-186437; Oct. 22, 1982, 57-186438; Oct. 26, 1982, 57-188395

Int. Cl.⁴ H04N *1/40*

U.S. Cl. 358—280 **18 Claims**



1. An image processor comprising:

image reading means for photoelectrically scanning image data of an original to obtain an input analog image signal;

sampling means for A/D-converting the input analog image signal to sample the image data, thereby obtaining a sampled digital image signal;

correcting means for linearly correcting the sampled digital image signal with respect to an image density between the original and a recording image in accordance with the image data of the original, wherein said correcting means performs a conversion to obtain an output Q_i' given by

$$Q_i' = \frac{Q_{iM}}{1 - 10^{-DOM}} \cdot \left[1 - 10^{\frac{DOM}{SH-HL} \cdot \{\log(10-HL - \frac{10-HL-10^{SH}}{Q_{iM}} Q_i) + HL}\right.$$

$$Q_i/Q_{iM} = (1 - 10^{-D_i})/(1 - 10^{-D_{iM}})$$

where

Q_i is the sampled digital image signal

Q_{iM} is the value of the sampled digital image signal when $D_i = D_{iM}$

HL is a predetermined black density of the original

D_{OM} is a recording density of black when a recording density of white is give as 0

D_i is a density of a pixel of the original

D_{iM} is a density of the pixel of the original having the highest black density value; and

processing image data generating means for generating a binary processing image signal in accordance with the output Q_i' from said correcting means.

4,586,090

DOCUMENT SCANNERS

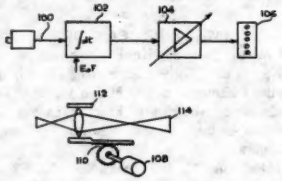
Hugh Wilman, 76 Mount Grace Road, Potters Bar, Hertfordshire, and James Brotton, 1 Moss Drive, Haslingfield, Cambridgeshire, both of England

Filed Nov. 4, 1983, Ser. No. 549,196

Claims priority, application United Kingdom, Nov. 5, 1983, 8231678

Int. Cl.[4] H04N *1/64, 1/387*

U.S. Cl. 358—285 **7 Claims**



1. A device for indicating the state of focus of an image of a document which is to be converted into a video signal by sequentially inspecting the incident light level of points within the image and generating an electrical signal having a parameter which varies with the light level, comprising:

(a) means whereby the incident light level of points within the image is sequentially inspected to generate an electrical signal whose amplitude varies with the light level at the inspected points;

(b) circuit means responsive to the electrical signal from the sequential inspection means for integrating the amplitude variations thereof to produce a varying amplitude focus indication signal;

(c) amplifying means for generating from the varying amplitude signal a varying control signal;

(d) an indicator comprising a linear array of a plurality of lamps;

(e) circuit means which provides operating current for the lamps corresponding to the amplitude of the focus indication signal, so that the number of lamps sequentially illuminated corresponds in a predetermined relationshp with respect to the focus indication signal;

(f) means for adjusting the focus of the image in response to visual inspection of the illuminated lamps, so as to obtain the best possible indication of the state of focus of the image.

4,586,091

SYSTEM AND METHOD FOR HIGH DENSITY DATA RECORDING

Spyro Panaoussis, Chicago, Ill., assignor to Kalhas Oracle, Inc., Darien, Ill.

Filed May 3, 1984, Ser. No. 606,695

Int. Cl.[4] G11B *5/09*

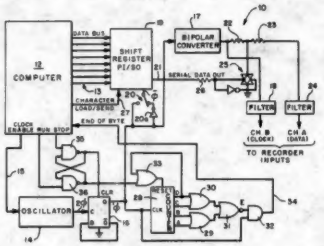
U.S. Cl. 360—40 **19 Claims**

1. A system for processing digitally encoded data for storage on a magnetic recording medium, comprising:

clock signal means for generating a periodic clock signal of substantially constant frequency;

data signal means operable from said clock signal for generating a periodic data signal of substantially constant frequency;

data conversion means responsive to said clock signal for converting the parallel digitally encoded data to a corresponding plurality of sequentially occurring bi-stable logic bits; and



signal attenuation means responsive to said plurality of sequentially occurring logic bits for attenuating said data signal in accordance with the logic state of each of said bits, whereby, the logic state of each of said bits is indicated by the relative level of said data signal.

4,586,092

THERMO-MAGNETO-OPTICAL MEMORY DEVICE AND RECORDING MEDIUM THEREFOR

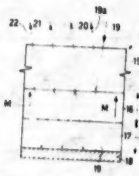
Jan W. D. Martens, and Winfried L. Peeters, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 443,007, Nov. 19, 1982, abandoned. This application Sep. 25, 1985, Ser. No. 780,235

Claims priority, application Netherlands, Sep. 27, 1982, 8203725

Int. Cl.[4] G11B *11/00*

U.S. Cl. 360—59 **15 Claims**



1. A thermomagnetooptical memory device comprising:

a recording medium having a magnetooptically active layer on a substrate, said magnetooptically active layer having first and second opposite surfaces;

means for producing a beam of laser radiation, said beam having a wavelength λ, said beam being incident on the first surface of the magnetooptically active layer;

means for focusing the beam of laser radiation onto selected locations on the recording medium; and

magnetooptical detection means arranged to receive laser radiation reflected from the recording medium;

characterized in that:

the recording medium further comprises a reflective layer for reflecting laser radiation incident thereon, said reflective layer being arranged facing the second surface of the magnetooptically active layer;

the magnetooptically active layer consists essentially of a polycrystalline Fe^{+3}-based oxidic material with a spinel structure said layer having a thickness such that destructive interference is produced between laser radiation re-

flected at the first surface of the magnetooptically active layer and laser radiation reflected by the reflective layer, the radiation reflected by the reflective layer passing through the magnetooptically active layer twice; and

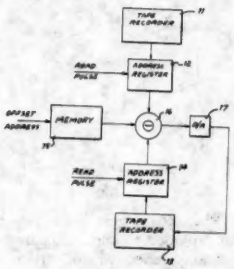
the recording medium further comprises a thermally-insulating dielectric layer arranged between the second surface of the magnetooptically active layer and the reflective layer, said dielectric layer being transparent to radiation of wavelength λ and having an optical thickness equal to an integral multiple of $\lambda/2$.

4,586,093

METHOD AND APPARATUS FOR SYNCHRONIZING PLAYBACK OF TAPES RECORDED IN DIFFERENT FORMATS

Yukio Fukuju, Yokohama, and Makoto Niiro, Sagamihar, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 21, 1983, Ser. No. 515,853
Int. Cl.[4] G11B *15/52, 27/19*
U.S. Cl. 360—73 **18 Claims**



6. A method of synchronizing the reproduction of information from first and second recording mediums having information recorded thereon in sequentially arranged blocks in a plurality of tracks, each said block occupying a predetermined amount of space L on each of said mediums, said second medium having an integral number N times as many of said tracks as said first medium in which said information has been recorded, N being greater than 1, the method comprising:

providing each of said first and second mediums with a plurality of first and second sequentially arranged sectors, respectively, identifying sequential spaces on said mediums parallel to said tracks, each said sector occupying an amount of space substantially equal to an integral multiple of L;

providing a first sector address on said medium for each said first sector, each said first sector address having a value different from the adjacent first sector address by a predetermined amount I;

providing a second sector address on said second medium for each said second sector, each said second sector address having a value different from the adjacent second sector address by a predetermined amount substantially equal to N times I;

reproducing information and said first sector addresses from said first medium at a first playback speed;

reproducing information and said second sector addresses from said second medium at a second playback speed; and

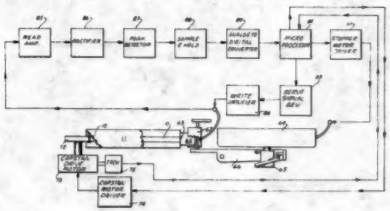
maintaining a predetermined difference between said first and second sector addresses being reproduced so that said first playback speed is maintained N times faster than said second playback speed and said reproduced information from said first and second mediums is maintained with a predetermined relationship therebetween.

4,586,094

METHOD AND APPARATUS FOR PRE-RECORDING TRACKING INFORMATION ON MAGNETIC MEDIA

John M. Chambors, Canton, and Francis Lum, Ann Arbor, both of Mich., assignors to Irwin Magnetic Systems, Inc., Ann Arbor, Mich.

Filed Mar. 13, 1984, Ser. No. 589,007
Int. Cl.[4] G11B *5/54*
U.S. Cl. 360—77 **27 Claims**

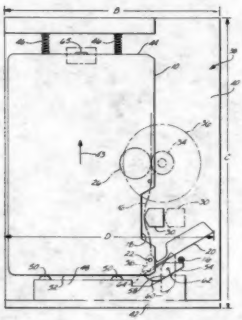


1. A method of initializing data-recording media for subsequent data storage use by pre-recording transducer-positioning signals thereon through use of the same general type of data storage device which is to be used in recording data on such media, said method comprising the steps of: locating a lateral edge of the recordable field on said media while the media is mounted for recording operation on such type of data storage device; positioning the transducer of such data storage device in operative transducing alignment with the marginal edge portion of said recordable field on said media at a first location; transporting said media longitudinally relative to said transducer along a path generally parallel to the axis of a desired recording track, while maintaining said transducer at said first location; selectively and periodically actuating said transducer during the said longitudinal transport of said media to record a first series of mutually-spaced positioning signals on said media; moving said transducer laterally with respect to said media to a new position further inward of the said recordable field on the media constituting a second location, and transporting said media longitudinally relative to said transducer along a path generally parallel to the axis of a desired recording track while maintaining said transducer at said second location; detecting the presence of at least certain of said recorded positioning signals in said first series thereof during said second longitudinal transport of said media, and actuating said transducer in timed response to detection of at least certain positioning signals in said first series thereof so as to record a second series of mutually-spaced positioning signals on said media located generally adjacent said first series and in a predetermined timed relationship with respect thereto; and repeating said steps of moving said transducer laterally with respect to said media a succession of times to a succession of new positions representing additional such locations, transporting said media longitudinally relative to said transducer while maintaining the latter at each of the said successive new locations, detecting the presence of at least certain of the positioning signals recorded on the media during a previous longitudinal transport of the media, and actuating said transducer in timed response to said detection of previously-recorded positioning signals so as to record a desired number of additional series of said spaced positioning signals on said media, each such series being in longitudinal alignment with one another and positioned generally adjacent a previously-recorded series and in predetermined timed relationship with respect thereto.

4,586,095
FAIL-SAFE LOCKING MECHANISM FOR TAPE CARTRIDGE DRIVE WITH MOVABLE READ/WRITE HEAD

Dennis R. Olmsted, San Diego, Calif., assignor to Data Electronics, Inc., San Diego, Calif.

Filed Nov. 26, 1982, Ser. No. 444,833
Int. Cl.[4] G11B *5/008, 15/00, 17/00*
U.S. Cl. 360—93 13 Claims



1. A fail-safe mechanism for preventing ejection of a tape cartridge from a receptacle in a tape drive when a read/write head is in contact with a tape in the tape cartridge, the cartridge having a housing, and a cartridge door on the housing for opening to expose a portion of the tape for contact with the head, the cartridge door having a door tripping arm for receiving pressure contact to open the cartridge door, the fail-safe mechanism comprising: movable latch means in the receptacle of the tape drive for moving into an operative position in pressure contact with the cartridge door tripping arm when the cartridge is positioned in the tape drive receptacle; means for moving the latch means into its operative position in contact with the cartridge door tripping arm for opening the cartridge door to expose the tape for its contact with the head; a rigid locking pin for engaging the latch means in its operative position; the tape drive including means for moving the read/write head toward an operative position in contact with the tape, and in which the locking pin is carried on the head-moving means for positioning the locking pin adjacent the latch means when the head is moved to its operative position for holding the locking pin in a fixed position for maintaining its contact with the latch means for holding the cartridge door in the open position; the locking pin holding the latch means in a fixed position maintaining said pressure contact with the cartridge door tripping arm to provide a restraint that prevents ejection of the cartridge from the tape drive receptacle while the head-moving means holds the read/write head in the operative position.

4,586,096
CASSETTE LOADING/EJECTING DEVICE

Hitoshi Okada, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 499,932
Claims priority, application Japan, Jun. 7, 1982, 57-96288; Jun. 15, 1982, 57-101301
Int. Cl.[4] G11B *15/66*
U.S. Cl. 360—96.5 3 Claims

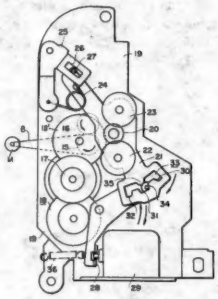
1. A cassette loading/ejecting device in a cassette-type tape player including a slide plate slidable from front to rear of the tape player, said slide plate including a cassette guide portion to guide a cassette inserted from front to rear of the tape player, thereby moving the cassette between an insertion position and a play position in accordance with movement of said slide plate, wherein said cassette loading/ejecting device comprises:

a motor rotatable in only one direction to drive a tape in said tape player;

a driving mechanism interposed between said motor and said slide plate to move said slide plate between front and rear positions in said tape player in response to rotation of said motor in said one direction;

a changeover plate pivotally provided in said driving mechanism for pivoting to invert the direction in which said slide plate is driven by rotation of said motor in said one direction;

a cassette loading drive gear and a cassette ejection drive gear provided in said driving mechanism for driving by said motor;



a cassette loading changeover gear and a cassette ejection changeover gear provided on said changeover plate so as to selectively engage respective said drive gears in response to said pivoting of said changeover plate;

an inversion plate pivotally disposed adjacent to said changeover plate for pivoting through an angle concurrent with said movement of said slide plate;

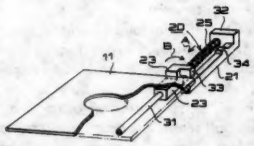
an inversion spring so connected between said inversion plate and said changeover plate that the direction of the pushing force of said inversion spring against said changeover plate is inverted by pivoting of said inversion plate; and

a means responsive to insertion or ejection of said cassette to allow pivoting of said changeover plate.

4,586,097
DISKETTE EJECTING MECHANISM FOR MAGNETIC DISK UNIT

Kazuo Koike, and Junji Kawada, both of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1983, Ser. No. 476,266
Claims priority, application Japan, Apr. 15, 1982, 57-54593[U]
Int. Cl.[4] G11B *5/016, 5/012, 5/008, 17/00*
U.S. Cl. 360—99 6 Claims



1. A diskette ejecting mechanism for magnetic disk unit

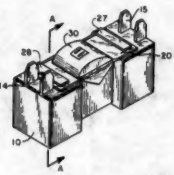
being provided with a guide (21) secured to a frame of said disk unit, an ejection bedplate (23) abutting against an end portion of a diskette and being mounted on said guide so as to be transferable in inserting and ejecting directions of said diskette, and a coiled spring (25) energizing said ejection bedplate along the ejecting direction of said diskette, comprising a slidable engaging piece (33) mounted on said ejection bedplate and sliding while contacting with said guide at the time of transferance of said ejection bedplate; and an engaging stepped portion (34) mounted on said guide and engaging with said slidable engaging piece under such a condition that said diskette is forcibly inserted to a prescribed position to set the same to prevent the transferance of said ejection bedplate along the ejecting direction of said diskette by means of said coiled spring; said ejection bedplate being rotatably mounted on said guide around the transferring direction of said ejection bedplate as its axis; torsional force of said coiled spring being applied to said ejection bedplate as torsional force towards the direction in which said slidable engaging piece contacts with said guide; said ejection bedplate (23) being provided with a projection (35) for releasing engagement, and an arm (36) for engaging said projection (35) to release said slidable engaging piece (33) from engagement with said stepped portion (34), said arm further preventing transferance of said bedplate (23).

4,586,098

ADJUSTABLE MOUNTING ARRANGEMENT FOR MAGNETIC HEAD

John Pretto, 624 S. Belmont, Arlington Heights, Ill. 60005

Filed Nov. 21, 1983, Ser. No. 553,404
Int. Cl.[4] G11B *5/48, 5/56, 21/24*
U.S. Cl. 360—109 **11 Claims**



1. Adjustable mounting means for supporting a transducer head, said mounting means comprising:

a head bracket including head receiving means;

an azimuth bracket adapted to adjustably support said trnasducer head, positioned on said head bracket so as to permit said transducer nead to be positioned partially within the confines of said head receiving means; and

flexible holding means retaining said azimuth bracket in contact with said head bracket;

whereby said azimuth bracket may be adjusted relative to the direction of motion of recording tape moving past said transducer head.

4,586,099

HEAD CLEANING CASSETTE WITH AUTOMATIC STOP FEATURE

Hiroyuki Suzuki, Saitama, and Shinichi Kobayashi, Chiba, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 31, 1983, Ser. No. 480,646
Claims priority, application Japan, Mar. 31, 1982, 57-50945
Int. Cl.[4] G11B *5/10, 5/127, 5/41, 23/02*
U.S. Cl. 360—128 **11 Claims**

1. A head cleaning cassette, comprising:

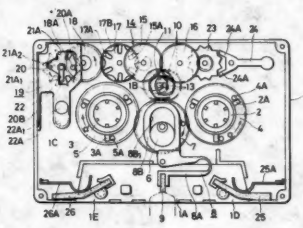
head cleaning means including a wiper portion for cleaning said head;

gear means including drive means for reciprocatingly moving said head cleaning means;

means for transferring torque from reel hubs of said cassette to said gear means; and

means for halting the cleaning operation of said head cleaning means after a predetermined time,

said means for halting including reduction gearing means receiving a rotative power input from said gear means and gearing switch means, said gearing switch means being movable to engage one of two input gears of said reduc-



tion gearing means in dependence upon the direction of rotation of said reel hubs, said reduction gearing means including geneva gear means, one geneva gear of said geneva gear means including stop means,

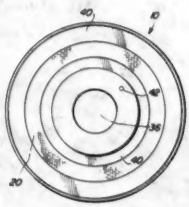
said reduction gearing means and said switch means being arranged such that the direction of rotation of said geneva gear means is constant regardless of the rotation direction of said reel hubs.

4,586,100

CLEANING DISC

David J. Howe, Columbia, and Paul E. Peters, Hartsburg, both of Mo., assignors to International Jensen Incorporated, Schiller Park, Ill.

Filed Mar. 18, 1983, Ser. No. 476,530
Int. Cl.[4] G11B *5/41*
U.S. Cl. 360—128 **25 Claims**



1. A cleaning disc for a contact-type information transducing head coupled to apparatus with program reading capabilities comprising:

a substrate;

a recording surface covering a first portion of said substrate;

cleaning means covering a second portion of said substrate; and

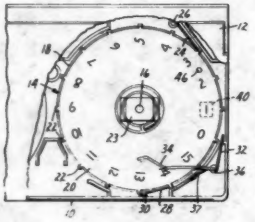
program means recorded on said recording surface for providing instructions to direct the transducing head onto said cleaning means,

said program means comprising means for directing the transducing head to varying portions of the cleaning means during successive cleaning operations.

4,586,101
TAPE RECORDER CASSETTE WITH TAMPER-PROOF COUNTER

Peter J. Vogelgesang, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 14, 1983, Ser. No. 457,906
Int. Cl.[4] B65H 75/00; G11B 23/02
U.S. Cl. 360—132 4 Claims

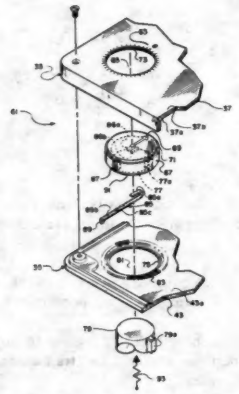


1. A tape cassette having first and second reels in closely adjacent coplanar positions and containing one reel of tape, and counting means for determining the number of transfers of said tape from said first to said second reel comprising a sensing arm disposed between said reels and pivotally supported at one end for oscillation between said reels, said sensing arm including a centrally attached double leaf spring having surfaces adjacent the centers of the reels for contacting the reeled tape on either reel, and means for detecting and recording the number of double oscillations of said arm comprising a spindle affixed to said cassette, indicator drums of a digital counter rotatably mounted on the spindle, and a pawl carried on said arm adjacent its free end for intermittently advancing one of said drums as said arm is oscillated from said second toward said first reel; said arm and spring being of insufficient mass to overcome the spring resistance and permit advancing the counter by impact energy applied to the cassette.

4,586,102
TRACK NUMBER INDICATOR

Richard J. Bresson, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,263
Int. Cl.[4] G11B 23/03, 5/016
U.S. Cl. 360—133 2 Claims



1. In a magnetic disk cartridge of the type wherein (a) a housing contains a magnetic disk, (b) a head-access opening is provided in said housing to receive a magnetic head for recording and/or reading information in substantially circular tracks on said disk, (c) a dial member is rotatable relative to said housing to a plurality of positions for indicating the number of tracks recorded on said disk, and (d) a driver-access opening is provided in said housing to receive a rotational driver for rotating said dial member to its track number positions, the improvement comprising:

respective engagable means corresponding to the track number positions of said dial member, said engagable means being arranged within said housing concentrically about said driver-access opening;

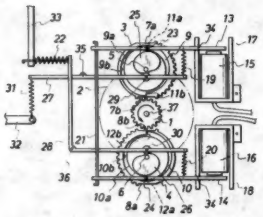
resilient locking means connected to said dial member and biased for engaging said respective engagable means to positively prevent said dial member from rotating out of a corresponding track number position; and

means supporting said locking means across said driver-access opening for displacement by the rotational driver to separate said locking means from said respective engagable means as the rotational driver is received through said driver-access opening, whereby the driver will maintain said locking means separated from said engagable means during rotation of said dial member.

4,586,103
ELECTROMAGNETIC CONTROL DEVICE FOR TAPE RECORDER

Zenshiro Uehara, 21-19, Hiyoshicho 4, Kokubunji-shi, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,224
Claims priority, application Japan, Dec. 11, 1981, 56-199550
Int. Cl.[4] G11B 15/00
U.S. Cl. 360—137 5 Claims



1. An electromagnetic control device a for tape recorder, and comprising:

a chassis,

a capstan rotatably mounted on the chassis,

a flywheel mounted on the capstan in coaxial relation with said capstan,

a first toothed wheel mounted on the capstan in coaxial relation therewith,

a second toothed wheel which has a pair of hiatuses and is rotatably mounted on the chassis for meshing engagement with the first wheel,

a plate cam mounted integrally with the second wheel,

a tiltable element which is mounted on the chassis such that it tilts with the rotation of the plate cam and which derives a force necessary for changeover operation of the tape recorder from angular displacement of said tiltable element,

a movable element which is mounted such that it is tiltable for locking engagement with and disengagement from the second wheel, the movable element locking the second wheel against rotation when any one hiatus of the second wheel is opposed to the first wheel,

an electromagnet exerting a magnetic attraction on the movable element for tilting same, and

a return spring having one end fixed on a side opposite to the side on which said force derived by the tiltable element is available,

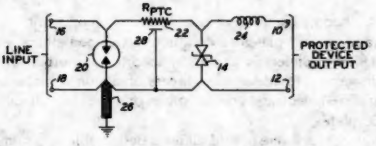
wherein the second wheel is provided with teeth only one peripheral portion between the hiatuses, and wherein the return spring is fixed to the movable element at a point which is generally symmetrical with respect to a core of said electromagnet about a pivot axis of the movable element.

4,586,104

PASSIVE OVERVOLTAGE PROTECTION DEVICES, ESPECIALLY FOR PROTECTION OF COMPUTER EQUIPMENT CONNECTED TO DATA LINES

Ronald B. Standler, Albuquerque, N. Mex., assignor to RIT Research Corp., Rochester, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,710
Int. Cl.⁴ H02H 9/04, 9/06
U.S. Cl. 361—91 **25 Claims**



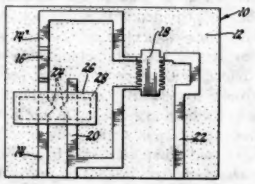
1. An overvoltage protection device for overvoltages which appear on a line connected to the input of the device, which line transmits signals with respect to an electrical circuit connected to the output of said device, said protection device comprising an element having a resistance which decreases when an overvoltage is present on said line to a value much less than the resistance presented by said circuit to said output, said element being connected in shunt with said line across said output, and means presenting an inductive reactance greater than the inductive reactance presented to said line by said element and of sufficient magnitude to enable the resistance of the element to decrease to said much less value before said overvoltage reaches the output of said device and said electrical circuit connected thereto, said inductive reactance presenting means being connected between said element and said output.

4,586,105

HIGH VOLTAGE PROTECTION DEVICE WITH A TAPE COVERED SPARK GAP

Raymond Lippmann, Ann Arbor, and James R. Chintyan, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 2, 1985, Ser. No. 761,799
Int. Cl.⁴ H02H 9/06
U.S. Cl. 361—117 **4 Claims**



1. A high voltage transient protection device on a printed circuit board comprising:

a dielectric substrate,

at least a pair of closely spaced circuit conductors on the substrate defining a spark gap for discharging high voltage, and

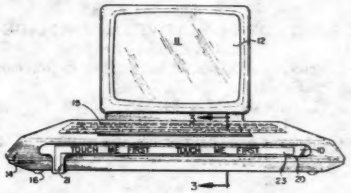
a tape secured to the printed circuit board overlying the spark gap for trapping gas in the spark gap.

4,586,106

STATIC DISSIPATIVE TOUCH DEVICE

Thomas G. Frazier, c/o J. Penner Corporation, Waterside Industrial Park, Box B113, R.D. #2, New Hope, Pa. 18938

Continuation-in-part of Ser. No. 644,321, Aug. 24, 1984. This application May 20, 1985, Ser. No. 735,870
Int. Cl.⁴ H05F 3/00
U.S. Cl. 361—212 **12 Claims**



1. A static dissipative touch device for use in combination with electronic equipment for protecting said equipment from electrical damage of the type comprising

a non-conductive base layer;

an electrically conductive layer applied to said base layer;

grounding means connecting said conductive layer to ground; and

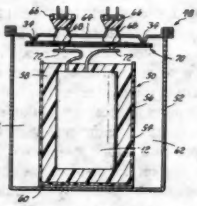
means for applying said device to the housing of said equipment the improvement comprising forming said base layer of a pliant, polymeric material and forming said conductive layer as a static dissipative layer by depositing an electrically conductive polymer material on said base layer as said static dissipative layer.

4,586,107

DRY CAPACITOR CIRCUIT INTERRUPTER

Frank D. Price, Nolan Rd., South Glens Falls, N.Y. 12801

Filed Jun. 5, 1984, Ser. No. 617,662
Int. Cl.⁴ H01G 1/06
U.S. Cl. 361—272 **10 Claims**



1. A dry capacitor system comprising:

a dry capacitor;

said dry capacitor including at least a capacitor roll;

a can surrounding said capacitor roll;

means for securing said capacitor roll within said can;

said can having a dimension sufficient to provide a space between it and said capacitor roll;

a sealing cover sealingly closing said can;

said sealing cover being of a type which is deformable under a gas pressure within said can;

at least one terminal passing sealably through said cover;

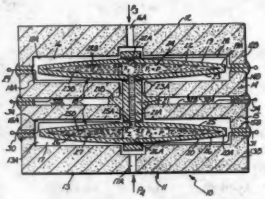
a terminal stud extending through said terminal and having an inner end terminating within said can;
at least one tab connected to said capacitor roll;
said tab extending from said capacitor roll into contact with said inner end;
means for affixing said tab to said inner end;
a circuit interrupter at an interface of said tab and said inner end; and
said circuit interrupter including means responsive to a deformation of said cover for breaking said means for affixing whereby said dry capacitor is removed from an electrical circuit.

4,586,108

CIRCUIT FOR CAPACITIVE SENSOR MADE OF BRITTLE MATERIAL

Roger L. Frick, Chanhassen, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 12, 1984, Ser. No. 660,395
Int. Cl.⁴ H01G *7/00*; G08C *19/10*
U.S. Cl. 361—283 **24 Claims**



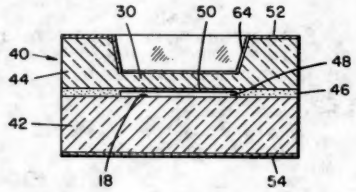
1. For use in combination with a differential pressure sensor assembly comprising first and second sensor sections each having a separate deflecting diaphragm mounted with respect to a sensor surface and initially substantially contiguous with such surface and capable of deflecting with respect to the surface to form separate internal chambers for each sensor section, means fluidly connecting the internal chambers, a quantity of substantially noncompressible fluid filling said chambers and said means fluidly connecting to bow the diaphragm relative to the respective sensor surface, whereby movement of one diaphragm in direction to reduce the volume of its associated internal chamber results in movement of the other diaphragm in direction to increase the volume of its internal chamber, means on the respective diaphragms and on the respective sensor surfaces for forming first and second sensing capacitors which vary in opposite sense as a function of differential changes in pressures acting on the diaphragms, the improvement comprising means for providing an output signal from such a pressure sensor assembly representing differentials in pressure acting on the diaphragms of the sensor elements of such a pressure sensor assembly including:
means for sensing the capacitance values of the first and second sensing capacitors of such a sensor; and
means associated with such a sensor assembly for providing a signal F_1 representing a change in density of the noncompressible fluid filling the internal chambers of such a pressure sensor assembly, and also coupled to the means for sensing for providing a signal F_2 which is a function of the capacitances of the first and second capacitors of such a pressure sensor assembly and thus of the differential pressure on the sensor elements thereof, and which signal F_2 is substantially zero when the sensed differential pressure is substantially zero, and for multiplying the signals F_1 and F_2 to provide the output signal.

4,586,109

BATCH-PROCESS SILICON CAPACITIVE PRESSURE SENSOR

Arthur J. Peters, Norco, and Eugene A. Marks, Riverside, both of Calif., assignors to Bourns Instruments, Inc., Riverside, Calif.

Filed Apr. 1, 1985, Ser. No. 718,136
Int. Cl.⁴ H01G *7/00*; G01L *9/12*; B05D *5/12*
U.S. Cl. 361—283 **28 Claims**



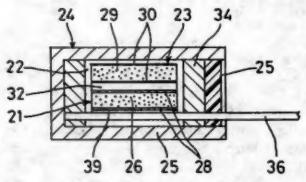
24. A silicon capacitive pressure sensor, comprising:
first and second plates of conductively-doped silicon separated by a dielectric gap and joined to each other around said gap by fused-together layers of silicon dioxide; and
a metallized electrical contact on an outer surface of each of said plates;
whereby at least one of said plates is deflectable into said gap by the application of pressure to an outer surface thereof.

4,586,110

COMPOSITE PART OF PIEZO-ELECTRIC RESONATOR AND CONDENSER AND METHOD OF PRODUCING SAME

Takashi Yamamoto, Hakui, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Nov. 26, 1984, Ser. No. 675,068
Claims priority, application Japan, Dec. 7, 1983, 58-232025
Int. Cl.⁴ H01G *1/14, 7/00*; H01L *41/04*; H03B *5/34*
U.S. Cl. 361—307 **5 Claims**



1. A composite part of a piezo-electric resonator and a condenser, characterized by that said condenser comprising a dielectric substrate provided with a common electrode on one side thereof and an output electrode on another side thereof and said piezo-electric resonator comprising a piezo-electric substrate provided with opposite electrodes on both sides thereof are fixedly integrated under the condition that a gap, which serves as a vibration space, is formed between a face of said condenser and a face of said piezo-electric resonator facing said face of said condenser, said fixedly integrated condenser and piezo-electric resonator being provided with an end electrode at each end portion thereof form a composite element, said composite element being housed in a housing, and said housing being provided with lead terminals connected with said both end electrodes and said common electrode.

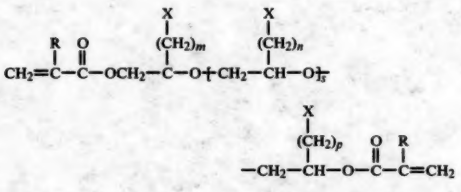
4,586,111

CAPACITOR WITH DIELECTRIC COMPRISING A POLYMER OF POLYACRYLATE POLYETHER PRE-POLYMER

Stanley W. Cichanowski, Bennington, Vt., assignor to SFE Technologies, San Fernando, Calif.

Filed Aug. 1, 1984, Ser. No. 636,638
Int. Cl.[4] H01G 4/08
U.S. Cl. 361—323 12 Claims

1. A capacitor comprising at least one electrode pair, the electrodes of the pair, and the electrode pairs, if more than one, being separated by a dielectric member, said dielectric member comprising a polymer of at least one polyacrylate polyether pre-polymer of the formula:



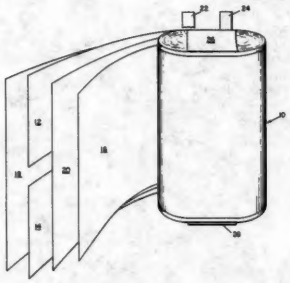
wherein R is hydrogen or an alkyl of from 1 to 5 carbon atoms; X is hydrogen or a dipolar group selected from the group consisting of halogen, carbonyl or nitrile; m, n and p each may be an integer from 0 to about 4; and s is an integer of at least zero provided that the value of s is such that upon vapor deposition the pre-polymer forms a continuous pin-hole free film.

4,586,112

CAPACITOR WITH IDLER

Frederick W. MacDougall, Marion, Mass., assignor to Aerovox Incorporated, New Bedford, Mass.

Filed Apr. 30, 1984, Ser. No. 605,102
Int. Cl.[4] H01G 4/38
U.S. Cl. 361—330 17 Claims



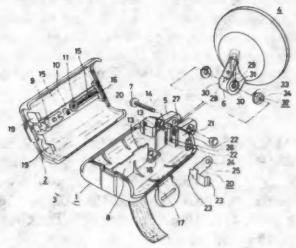
10. A capacitor of the high-energy-density type, comprising two metal foil electrodes, two terminals connected respectively to said electrodes, and a metallized idler having an electrically non-conducting substrate with a metallized coating thinner than said metal foil electrodes and capacitively coupled thereto.

4,586,113

LAMP FOR BICYCLE

Sadaharu Tsuyama, Osaka, Japan, assignor to Tsuyama Mfg. Co., Ltd., Japan

Filed Dec. 31, 1984, Ser. No. 687,654
Claims priority, application Japan, Jan. 24, 1984, 59-9066[U]
Int. Cl.[4] F21L 9/00
U.S. Cl. 362—72 5 Claims



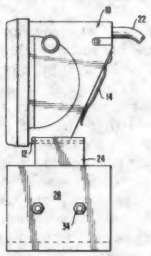
1. An illuminating device for a bicycle or like wheeled vehicle comprising a light housing and a battery case pivotally secured to one another by means including a pair of branched arms so that the vertical angle of the position of said light housing can be adjusted, metallic terminals for positive and negative current provided in the battery case to press and hold batteries therein and the respective ends thereof of the metallic terminals extending from the battery case along the inner sides of the arm portions, metallic terminals for positive and negative current in the light housing extending to a base portion of the light housing in through holes in the base portion, an electrical connection being made between the respective terminals in the light housing and the batteries case by means of a pair of washers each having a projection thereon fixed between the arm portions and the base portion.

4,586,114

NIGHT-HUNTING METHOD AND APPARATUS

N. D. Riley, Rte. 4, Box 49, Union City, Tenn. 38261

Filed Oct. 12, 1984, Ser. No. 660,031
Int. Cl.[4] F41G 1/34; F41C 27/00
U.S. Cl. 362—191 11 Claims



4. A hunting light and attachment means adapted to be carried by a hunter, said light comprising:

lamp means for providing night-hunting illumination;

a portable power source adapted to be carried by the hunter, said power source connected to said lamp means;

attachment bracket means adapted to be affixed to the hunter's weapon said first bracket means including an adapter clamp having legs shaped to cooperate with the hunter's weapon for mounting said adapter clamp on said weapon, and adjustment means for fixedly attaching said adapter

clamp to the weapon by tightening said legs against the weapon, said attachment bracket means also including holding means for providing quick mounting and quick release of said lamp means, said holding means being permanently affixed to said adapter clamp;

carrying bracket means adapted to be worn by the hunter;

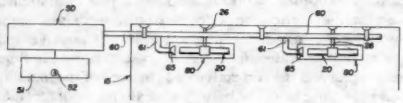
lamp bracket means affixed to said lamp means for releasably attaching said lamp means to said attachment and carrying bracket means, respectively, so that the lamp means can, alternatively, be attached to said weapon to provide light for aiming said weapon or worn by the hunter, said lamp bracket means being shaped to provide one-handed quick mounting and quick release of said lamp means in cooperation with said attachment and carrying bracket means.

4,586,115

ELECTROMAGNETIC RADIO FREQUENCY EXCITED EXPLOSION PROOF LIGHTING METHOD AND SYSTEM

S. Mort Zimmerman, 13626 Neutron Rd., Dallas, Tex. 75234, and Joseph Broz, 1228 15th St., Suite 306, The Granite Building, Denver, Colo. 80202

Filed Apr. 6, 1984, Ser. No. 597,672
Int. Cl.[4] F21S *3/02*
U.S. Cl. 362—217 **24 Claims**



1. A method for providing illumination within an area having an atmosphere which is explosion prone when exposed to spark, flame or intense heat, including the steps

fabricating lighting devices which include a sealed envelope having fluorescent material on the inner wall surfaces thereof responsive to radiation, the envelope containing a gas responsive to radio frequency electromagnetic radiation to activate the fluorescent material to provide visible light;

placing at least one of said lighting devices in said explosion prone area;

generating radio frequency electromagnetic energy at a location outside of said explosion prone area;

transmitting said radio frequency electromagnetic energy into and within said explosion prone area through transmission conduit means;

connecting at least one electromagnetic energy radiating device to said conduit means within said explosion prone area; enclosing said radiating device with a radiation passive, electrically insulating material;

placing one of said radiating devices adjacent to but spaced from each of said lighting devices; and irradiating each of said lighting devices by means of an adjacent radiating device to energize said lighting devices.

13. A lighting system for illuminating an area having an atmosphere which is explosion prone when exposed to spark, flame or intense heat, said system comprising

at least one lighting device disposed in said explosion prone area, each comprising a sealed envelope having a radiation responsive fluorescent material on its interior wall surface, and containing a gas responsive to radio frequency electromagentic radiation to activate said fluorescent material;

generating means for generating radio frequency electromagnetic energy, disposed outside said explosion prone area;

transmission means for transmitting radio frequency electromagentic energy from said generating means into and within said explosion prone area;

at least one electromagnetic energy radiating device connected to said transmission means within said explosion prone area; said radiating device and the connection between said radiating device and said transmission means being encased in radiation passive, electrically insulating material;

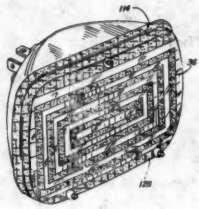
one of said radiating devices being disposed within said explosion prone area adjacent to but spaced from each one of said lighting devices.

4,586,116

VEHICLE HEADLAMP WITH YELLOW AND MAIN LIGHT TRANSMISSION

George C. Kasboske, 2820 N. Whipple, Chicago, Ill. 60618

Filed Sep. 21, 1984, Ser. No. 653,437
Int. Cl.[4] F21V *9/00*
U.S. Cl. 362—293 **9 Claims**



1. An improved vehicle headlamp of the type having a housing with a light-reflecting surface, a source of illumination and a light-diffusing element, the improvement comprising: said light-diffusing element having a first transparent, masked, yellow-colored zone containing at least 3 spaced and distinct yellow light-transmitting portions from which a first primarily yellow light emanates and a second transparent zone through which a second light different from the first light emanates with the source of illumination activated,

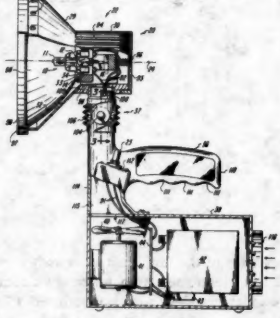
said first light affording effective penetration of fog, dust, snow, rain and/or smoke.

4,586,117

AIR COOLED LIGHT

William J. Collins, Boulder, Colo., assignor to Collins Dynamics, Inc., Aurora, Colo.

Division of Ser. No. 404,333, Jul. 30, 1982, Pat. No. 4,502,103. This application Jan. 24, 1985, Ser. No. 694,290
Int. Cl.[4] F21S *1/02*; F21V *33/00*
U.S. Cl. 362—373 **6 Claims**



1. A portable light including at least one lamp bulb, a battery

and a control circuit for conducting electrical current from the battery to the lamp bulb comprising in combination:

an airflow passageway in which said battery, said control circuit, and said lamp bulb are serially mounted, said airflow passage defined at one end by an inlet in airflow communucation with the atmosphere and defined at another end by an outlet in airflow communication with the atmosphere, and means for moving air between the inlet and outlet along said air passageway mounted in said air passageway and actuated by said control circuit.

4,586,118

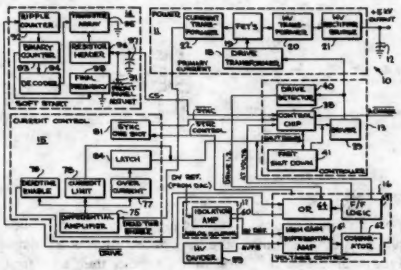
CAPACITOR CHARGING FET SWITCHER WITH CONTROLLER TO ADJUST PULSE WIDTH

Alex M. Mihalka, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 5, 1984, Ser. No. 617,651

Int. Cl.[4] H02M *3/337*; H02H *7/122*

U.S. Cl. 363—17 **14 Claims**



1. A switching power supply for charging a capacitive load, comprising;

a step-up transformer having its secondary connected to the load;

four power MOSFETs arrayed in a full bridge configuration connected to the primary of the step-up transformer;

control means connected to the MOSFETs for alternately switching on and off diagonal pairs of the MOSFETs;

soft start means connected to the control means for periodically adjusting pulse width to maintain approximate peak current to the load, the soft start means comprising a timing capacitor, a plurality of parallel timing resistors of different values connected to the timing capacitor, and selection means for sequentially selecting one of the timing resistors for discharging the timing capacitor with a time constant determined by the value of the selected timing resistor.

4,586,119

OFF-LINE SWITCHING MODE POWER SUPPLY

Leonard J. Sutton, Guelph, Canada, assignor to ITT Corporation, New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,701

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—17 **15 Claims**

1. A direct current to direct current converter for use in a power supply system including a direct current voltage source, said converter comprising:

drive control means connected to said voltage source, operated to generate periodic primary pulses;

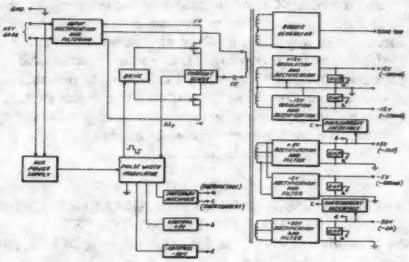
transformer means connected to said drive control means and coupled to a plurality of output circuits operated in response to said primary pulses to generate a plurality of periodically occurring output pulses; and

voltage feedback control means connected between one of said plurality of output circuits and said drive control means, said voltage feedback control means operated in response to the voltage output of said one output circuit to generate a pulse width adjustment signal, said drive control means operated in response to said adjustment signal to adjust the width of said primary pulses; wherein said drive control means comprises:

a pulse width modulator operated to generate alternately occurring first and second switching pulse trains;

a drive circuit connected to said pulse width modulator operated to amplify said first and second switching pulse trains; and

a pair of switching field effect transistors, connected in a half-bridge configuration, operated in response to said first and second amplified pulse trains to generate said primary pulses, wherein there is further included:



first voltage feedback control means direct current coupled between a first one of said plurality of output circuits and said drive control means, said first means operated in response to the voltage output of said first output circuit to generate a first pulse width adjustment signal, and

second voltage feedback control means alternating current coupled between a second one of said plurality of output circuits and said drive control means, said second means operated in response to the voltage output of said second output circuit to generate a second pulse width adjustment signal, said drive control means operated in response to said first and second adjustment signals to adjust the width of said primary pulses.

4,586,120

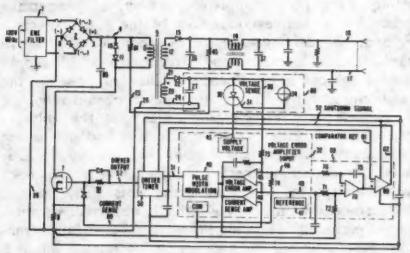
CURRENT LIMIT SHUTDOWN CIRCUIT WITH TIME DELAY

Randhir S. Malik, Succasunna, and Martin H. Patoka, Randolph, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 30, 1983, Ser. No. 566,919

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—21 **5 Claims**



2. A DC-to-DC converter comprising:

input means for accepting a DC voltage source,
a power switching device for periodically coupling the input means to a primary winding of a power transformer,
a secondary winding of the power transformer being coupled to an output circuit,
a tertiary winding of the power transformer coupled to a charge storage device,
a control circuit energized by the tertiary winding and the charge storage device coupled through a driver circuit to periodically bias the power switch into conduction,
means for initiating a start-up of the converter including switching means responsive to a predetermined amplitude of voltage on the charge storage device to breakdown and couple an energizing signal to the control circuit, the means for initiating a start-up comprising a silicon unilateral switch coupled to be energized by a voltage on the charge storage device and further coupled to a trigger control of a SCR connected to couple energy from the charge storage device to the control circuit,
means to supply charge to the charge storage device from the means for providing a DC voltage source, and
said control circuit including means for responding to an overcurrent condition to shutdown the power switch, said means for responding including time delay means to delay shutdown for a preset short-time interval.

4,586,121

CONTROL SIGNAL GENERATOR ARRANGEMENT FOR SEMICONDUCTOR SWITCHES

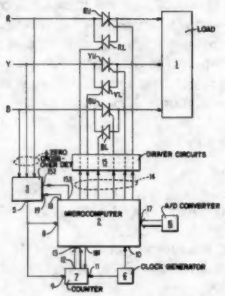
John E. Gilliam, Carshalton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 10, 1982, Ser. No. 448,666

Claims priority, application United Kingdom, Dec. 18, 1981, 8138175; Feb. 22, 1982, 8205159

Int. Cl.[4] H02P *13/26*

U.S. Cl. 363—87 **13 Claims**



1. A control signal generator arrangement for semiconductor switches for controlling power delivered to a load from an alternating current power supply source comprising inputs for connection to respective conductors of the A.C. power, a further input for receiving a signal at least nominally indicative of the time-fraction of each period of the total available supply waveform it is required be utilised for delivering power to the load, and outputs for feeding control inputs of said switches, means for detecting zero-crossing instants of the voltages between a pair or pairs of said conductors and generating control signals at said outputs so that each control signal is generated a predetermined period of time before a zero-crossing instant is expected to occur on the basis of the time at which a zero-crossing instant has already occurred, said predetermined period of time being proportional to the time-fraction currently indicated by a signal at the further input, a constant one-to-one relationship existing between the particular output at which each control signal is generated and the particular type of zero-crossing instant of each period of the supply with respect to the expected instant of occurrence of which the corresponding predetermined period of time is measured, and means for producing respective signals representative of the individual intervals elapsing between successively detected zero-crossing instants and for generating each of the control signals the predetermined period of time before the corresponding zero-crossing instant is expected to occur on the basis of the time at which a zero-crossing instant has already occurred and the time which elapsed between the instants at which the zero-crossings of the same respective types occurred in the preceding period of the supply as represented by the corresponding signal or signals produced.

4,586,122

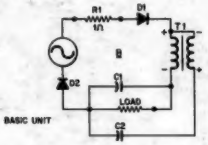
POWER ENHANCER

Dolty R. Self, Las Cruces, N. Mex., assignor to Enhancement Systems, Inc., Las Cruces, N. Mex.

Filed Mar. 9, 1983, Ser. No. 448,688

Int. Cl.[4] H02M *7/06*

U.S. Cl. 363—126 **5 Claims**



1. A power enhancer device having a primary and a secondary circuit, said device comprising the combination of a pulsating voltage source tied to a first diode means, then to a first primary lead of a transformer, a second primary lead of the transformer being connected to a first side of a load and the load being connected to a second diode means, thus forming the primary circuit; a first secondary lead of the transformer being connected to its reverse polarized primary on an input side and a second secondary lead of the transformer being connected to an electrolytic capacitor that is in turn connected to a second side of the load, thus completing the secondary circuit.

4,586,123

DIGITAL CONTROL SYSTEM FOR THE SPEED OF A SEWING MACHINE

Horst Plassmeier, Herford, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Nov. 25, 1983, Ser. No. 555,186

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1982, 3243549

Int. Cl.[4] G05B *19/18, 19/29;* **G06F** *15/46;* **D05B** *19/00*

U.S. Cl. 364—167 **11 Claims**

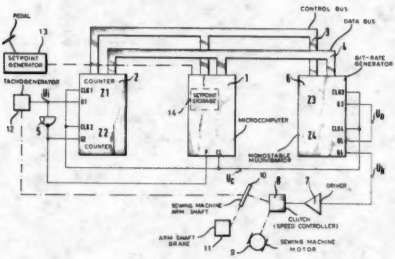
1. A fully digitalized control system for a speed of an arm shaft of a sewing machine of the type in which at least one speed-regulating member is provided for the shaft, said system comprising:
a microcomputer and two circuit elements connected to each other and to said microcomputer by a control bus and a data bus for data transfer between each element and the microcomputer, a first one of said elements being provided with a pair of counters each having a clock input and a gate input, the second of said elements being provided with a bit-rate generator having a clock input and an output and a retriggerable programmable monostable multivibrator having a clock input, a gate input, and an output;
means connecting a clock output of said microcomputer to said gate inputs to apply a quartz-stabilized counting frequency f_c thereto;

means for deriving a rectangular voltage signal U_l with a frequency f_l substantially smaller than the frequency f_c and representing the actual speed of said shaft for applying said signal U_l to the gate input of either said first or said second counter;

an inverter connected between said deriving means and the gate input of another of said counters for applying an inverse of said signal U_l to said other of said counters and to a port of said microcomputer whereby pulses of the frequency f_e for each of a number of comparisons are accumulated during pulses of the signal U_l in said one of said counters and during intervals between pulses of the signal U_l in the other of said counters said count accumulated in one of said counters during an immediately preceding pulse or interval is compared by said microcomputer as the inverse of an actual value signal with a binary inverse set point signal to produce a keying ratio, said microcomputer containing preprogrammed stored data blocks for each of a plurality of set point values for the shaft speed with individual parameters for generating the respective keying ratios;

means for connecting said output of said bit-rate generator to said gate input of said monostable multivibrator; and

means for connecting the output of said monostable multivibrator with a driver for said member so as to apply a rectangular voltage U_k to said driver representing a control magnitude for the speed of said shaft determined by the keying ratio and developed by said bit-rate generator and said monostable multivibrator of said other element.



4,586,124

DEVICE FOR REGULATING LINEAR MOTION

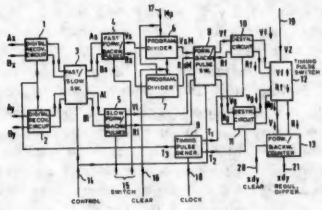
Gerd-Walter Wiederstein, Gummersbach, Fed. Rep. of Germany, assignor to Starkstrom Gummersbach GmbH, Marienheide, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 564,229

Claims priority, application European Pat. Off., Dec. 31, 1982, 82112131.6

Int. Cl.[4] G05B *19/18, 11/18, 11/32;* **G06F** *15/46*

U.S. Cl. 364—167 **12 Claims**



11. A device regulating linear motion of a driven component part, particularly of a driven part of a machine tool moving along at least two correlated axes x and y of which one is a guiding axis and the other a guided axis, comprising a master drive unit and a plurality of follower drive units, each drive unit cooperating with an actual displacement sensor each delivering a pair of phase-shifted timing pulses defining the actual displacement of said component part along or about the assigned axes;

a common regulating difference generator including a counter coupled to said actual displacement sensors to determine from the timing signals a regulating difference signal from which a proper sign is determined;

a position regulator connected between said counter and said drive units to regulate the follower drive units in response to motions of said master drive unit; a plurality of timing pulse multipliers connected to assigned actual displacement sensors, each timing pulse multiplier including a digital recovery unit, a switchover unit, a pair of grogrammable dividers and a pulse sign switch for separating said timing pulses into forward and backward pulses and for multiplying the separated pulses by factors M_{p1} through M_{pn} which upon switching over in the pulse sign switch are delivered to said common regulating difference generator, said regulating difference generator having the form of a summer connected to respective timing pulse multipliers for delivering at an output of the summer the regulating difference signal.

4,586,125

NUMERICAL CONTROL WORKING SYSTEM

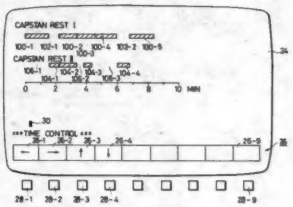
Kiyoshi Takagawa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1983, Ser. No. 529,774

Claims priority, application Japan, Sep. 3, 1982, 57-153509

Int. Cl.[4] G06F *15/46;* **G05B** *19/18*

U.S. Cl. 364—167 **4 Claims**



1. In a numerical control working system characterized in that a period of working time consisting of periods of travelling and idling times of respective tool rests is obtained by an automatic program, the improvement comprising means for simultaneously displaying said working time periods as a graph on a display, and means for correction shifting said travelling and idling times so as to reduce the working time period.

4,586,126

FEED RATE CONTROL

Gary L. Funk, and James D. Voelkers, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1984, Ser. No. 597,155

Int. Cl.[4] G05B *15/00*

U.S. Cl. 364—172 **6 Claims**

1. Apparatus for controlling the flow of feed to a process, wherein it is desired to supply P units of feed to said process during a first time period which ends at a time T, wherein the feed rate for a part of said first time period has been limited such that, if such limited feed rate were used for said first time period, P units of feed would not be supplied to said process during said first time period and wherein, at a time T_1, additional feed is available to be supplied to said process, said apparatus comprising:

means for establishing a first signal representative of the actual flow rate (V_1) of said feed to said process at said time T_1;

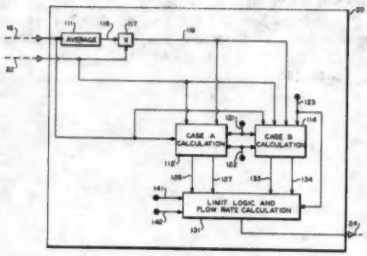
means for establishing a second signal representative of the total amount of feed which has been supplied to said process during said first time period at said time T_1;

means for establishing a third signal representative of the acceleration (a) which should be applied to the feed rate at said time T_1 over a second time period $T-T_1$ in order to supply P units of feed during said first time period and also provide a substantially constant increase in the feed rate between said time T_1 and said time T in response to the magnitude of P, T, said first signal and said second signal;

means for establishing a fourth signal representative of the final feed rate at said time T if the acceleration represented by said third signal is applied to the flow rate represented by said first signal over said second time period;

means for establishing a fifth signal representative of the maximum allowable acceleration (g) of the feed rate to said process;

means for establishing a time T_5 wherein T_5-T_1 is representative of the length of time which the acceleration g must be applied to the feed rate represented by said first signal



in order to supply P units of feed to said process during said first time period;

means for establishing a seventh signal representative of the feed rate at said time T if said acceleration g is applied to the flow rate represented by said first signal between said time T_1 and said time T_5;

means for establishing an eighth signal representative of the desired feed rate at a time T_2, which is later in time than said time T_1, in response to said first signal, said third signal and said fifth signal, wherein T_2-T_1 is the calculation interval between the calculation of new magnitude for said eighth signal, wherein the magnitude of said eighth signal is given by $V_1+(a)(T_2-T_1)$ if the magnitude of said fourth signal is not greater than the maximum allowed feed rate for said process (V_{max}) and the absolute value of a is less than the absolute value of g and wherein the magnitude of said eighth signal is given by $V_1+(g)(T_2-T_1)$ if the magnitude of said fourth signal is greater than V_{max} or if the absolute value of a is greater than the absolute value of g, $T-T_5$ is greater than zero and the magnitude of said seventh signal is less than V_{max}; and

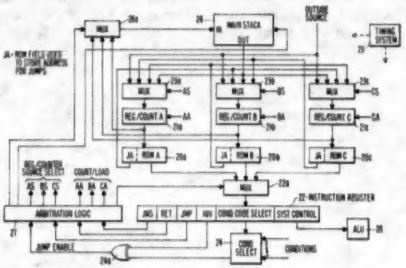
means for manipulating the flow rate of feed to said process in response to said eighth signal.

4,586,127

MULTIPLE CONTROL STORES FOR A PIPELINED MICROCONTROLLER

Carlos F. Horvath, West Chester, Pa., assignor to Burroughs Corp., Detroit, Mich.

Filed Nov. 3, 1982, Ser. No. 438,702
Int. Cl.[4] G06F *9/26, 9/28*
U.S. Cl. 364—200 **9 Claims**



1. A microcontroller for controlling a digital device said microcontroller comprising:

at least three control memories each for storing a set of miroinstructions, each microinstruction being formed of a control field for controlling said digital device, a jump address field specifying the location in another control memory of the next microinstruction to be executed should a jump to subroutine or a return from subroutine be required and an instruction field specifying whether that particular microinstruction is a jump microinstruction, return microinstruction or requires neither action;

at least three address registers one for each control memory to address the corresponding control memory for the next microinstruction to be fetched;

means for fetching said microinstructions from each of said control memories in every clock cycle;

an instruction register coupled to the respective memories and said digital device for receiving the control field and instruction field of one of said microinstructions fetched from said control memories;

a multiplexer coupled between said instruction register and said control memories to select the instruction field of one of the microinstructions being fetched from said respective control memories;

interconnection means coupled between each of said control memories and the address register of said another control memory for supplying a jump address to said address register of said another control memory;

logic means coupled to said instruction field portion of said instruction register and to said address registers to specify one of said registers as a program counter, one of said registers as a jump address register and one of said address registers as a return from subroutine register;

means responsive to said logic means to increment said program counter, to load a new address into said jump address register and to keep said return from subroutine register current contents; and

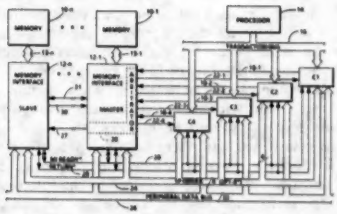
push-down stack means coupled to said address registers to receive one or more return from subroutine addresses in a first-in last-out manner to accommodate the execution of a series of nested subroutines.

4,586,128

ARBITRATOR CIRCUIT AND TECHNIQUE FOR USE IN A DIGITAL COMPUTING SYSTEM HAVING MULTIPLE BUS CONTROLLERS

Dale S. DeWoskin, San Marcos, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 14, 1983, Ser. No. 485,044
Int. Cl.[4] G06F *13/18*
U.S. Cl. 364—200 7 Claims



1. In a digital computing system having multiple controllers of a type where each controller periodically sends request signals to access a memory, an arbitrator device for receiving the request signals and for generating grant signals which permit access of the controllers to said memory one at a time, saod arbitrator comprising:

an input gating structure means for receiving said grant signals and said request signals from the controllers on a set of input terminals and for passing each received request signal to a respective output terminal subject to a respective condition, the condition being that a request signal from any one particular controller is inhibited from passing by a grant signal to any other controller;

a priority encoder means for selecting one request signal at a time in accordance with a prescribed manner of protocol from those request signals that are passed to the output terminals of said input gating structure means; said priority encoder having input terminals coupled to said output terminals of said input gating structure means;

a request register means having input terminals coupled to output terminals of said priority encoder means, for storing the one request signal selected by said priority encoder means;

a first ORing means for generating signals as the logical OR of the one request signal stored in said request register means with the one request signal selected by said priority encoder means;

a grant register means having input terminals coupled to said first ORing means for storing the logical OR signal therefrom; and

a second ORing means for supplying said grant signals to said controllers and to said input gating structure as the logical OR of said logical OR signal stored in said grant register means with the one request signal selected by said priority encoder means.

4,586,129

APPARATUS AND METHOD FOR TESTING AND VERIFYING THE TIMING LOGIC OF A CATHODE RAY TUBE DISPLAY

Thomas L. Murray, Jr., Merrimack, N.H.; Kin C. Yu, Burlington, and Thomas O. Holtey, Newton, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

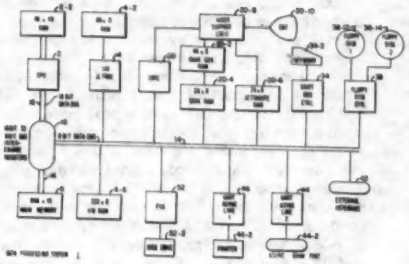
Filed Jul. 5, 1983, Ser. No. 510,712
Int. Cl.[4] G06F *3/153;* H04N *5/04*
U.S. Cl. 364—200 7 Claims

1. A method of verifying the correct synchronization of a cathode ray tube (CRT) display subsystem of a data processing system, said data processing system including an I/O microprocessor, a dynamic random access memory (RAM) which is periodically refreshed and said CRT display subsystem, said method comprising the steps of:

(a) generating vertical synchronization signals in said CRT display subsystem;

(b) interrupting said I/O microprocessor by a first occurrence of said vertical synchronization signals;

(c) by said I/O microprocessor generating a plurality of control signals in a first state for selecting as an input to a counter a refresh signal which refreshes addressed locations of said RAM;



(d) by said counter, counting the number of said refresh signals;

(e) interrupting said I/O microprocessor by a subsequent occurrence of a vertical synchronization signal;

(f) reading out the count of said refresh signals when said I/O microprocessor has been interrupted by a predetermined number of occurrences of said vertical synchronization signals; and

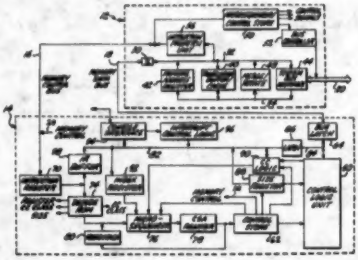
(g) verifying that the count of said refresh signals is within a first predetermined range thereby indicating that said vertical synchronization cycle timing is correct.

4,586,130

CENTRAL PROCESSING UNIT FOR A DIGITAL COMPUTER

H. Bruce Butts, Jr., Seattle; David N. Cutler, Mercer Island; Peter C. Schnorr, Redmond, and Robert T. Short, Woodinville, all of Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 3, 1983, Ser. No. 538,373
Int. Cl.[4] G06F *9/22, 9/30, 13/00*
U.S. Cl. 364—200 4 Claims



1. A central processing unit in a data processing system including a system bus and a central memory unit, which comprises:

(a) macroinstruction execution means for issuing a memory control command and a virtual memory address to access a variable length macroinstruction consisting of an operation code and one or more operand specifiers stored in

said central memory unit, such access occurring in accordance with a microprogram selected in response to said memory control command, said macroinstruction execution means comprising:

(i) decode means for decoding the operation code of said macroinstruction to issue a microaddress of one of a set of microinstructions, a size code indicating the length in bytes of data upon which said macroinstruction shall operate, and a condition code class code specifying the mapping of microinstruction condition codes to macroinstruction condition codes, and including means for decoding said operand specifies to issue either data upon which said macroinstruction is to operate or a data address and an addressing mode indicator specifying any one of multiple addressing modes;

(ii) control store means having stored therein microinstructions comprised of a data path control field, a condition code/size field, and a next address control field, the control store means being adapted for issuing said memory control command and for supplying a microinstruction in response to said microaddress; and

(iii) microinstruction logic control means responsive to said data path control field, said size code, and said condition code/size field, and receiving data from said decode means and indirectly from said central memory unit for executing said set of microinstructions and for issuing said virtual memory address to access data from said central memory unit; and

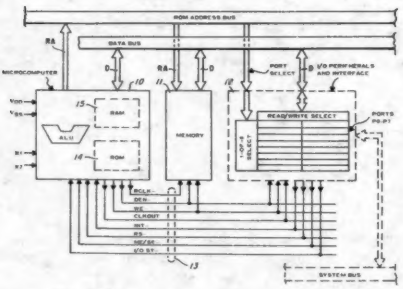
(b) memory access means responsive to said memory control command and to said virtual memory address, and including a data cache memory array and a microprogram control means, and operating asynchronously to said macroinstruction execution means under the control of said microprogram, for translating said virtual memory address to access data from said data cache memory array or by way of said system bus from said central memory unit and supplying data so accessed to said macroinstruction execution means.

4,586,131

MICROCOMPUTER HAVING DATA MOVE CIRCUITS FOR WITHIN-MEMORY SHIFT OF DATA WORDS

Edward R. Caudel; Surendar S. Magar, and Antony W. Leigh, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 350,951, Feb. 22, 1982, Pat. No. 4,491,910.
This application Sep. 26, 1984, Ser. No. 654,572
Int. Cl.[4] G06F *13/06, 15/00*
U.S. Cl. 364—200 **9 Claims**



1. A microcomputer device formed in a single integrated circuit comprising:

an arithmetic/logic unit having a data input and a data output:

a data memory having an array of memory locations for storing data words; said data memory having data input-/output means, and having addressing means for accessing locations of data words in the array for store and recall of data words via said input/output means;

data bus means coupled to the data input and data output of the arithmetic/logic unit and to the data input/output means of the data memory;

shift means included in said data memory means, said shift means moving an entire data word in the memory from one location in the array to another location having an adjacent address, said data word being shifted within said shift means through a shift path that does not include said data bus means and without being coupled through said arithmetic/logic unit to implement the shift,

means for accessing instruction words from a program memory and loading the instruction words into an instruction register, and control means responsive to the instruction words in the instruction register to generate control signals which are coupled to said arithmetic/logic unit, to said data bus means, and to said shift means to control the operation thereof.

4,586,132

Patent Not Issued For This Number

4,586,133

MULTILEVEL CONTROLLER FOR A CACHE MEMORY INTERFACE IN A MULTIPROCESSING SYSTEM

Thomas M. Steckler, Christiana, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 5, 1983, Ser. No. 482,237
Int. Cl.[4] G06F *13/00, 15/16, 12/00*
U.S. Cl. 364—200 **7 Claims**

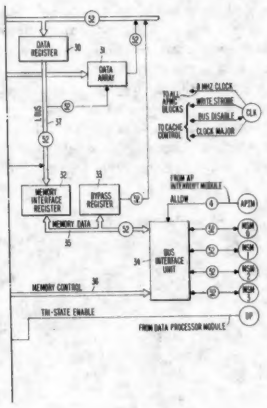
1. A system interface unit for asynchronous control of transmission of data and code between a processor and a main memory system, said interface unit comprising:

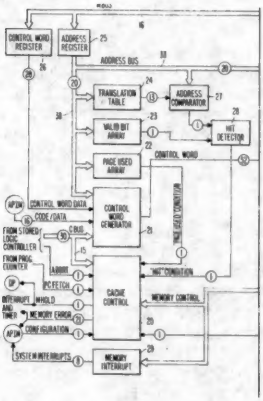
memory interface means coupled to said main memory system for transmitting data and code to and receiving data and code from said memory system;

cache mechanism means coupled to said processor and to said memory interface means for storing data and code received from said main memory system for access by said processor; and

a first control store and a second control store each having output means coupled to said cache mechanism means and said memory interface means respectively to provide control signals thereto; to independently control the simultaneous operation of said memory interface means and said cache mechanism means;

said first control store having an input means being coupled to receive a command code from said processor as at least a part of an address, said first control store supplying, in response to said command code, a second command code to address said second control store, said second control





store having an input means being coupled to said first control store output means;

each control store input means being provided with program counter means for simultaneous operation of said respective control stores by incrementing a previous address to address the respective control store unless a new address is received.

4,586,134

COMPUTER NETWORK SYSTEM AND ITS USE FOR INFORMATION UNIT TRANSMISSION

Bertil E. Norstedt, Lidingo, Sweden, assignor to International Business Machines Corp., Armonk, N.Y.

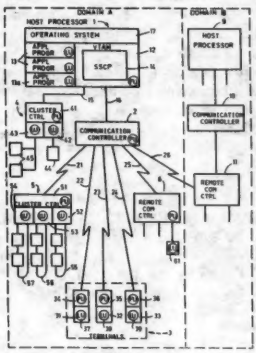
Filed Feb. 15, 1984, Ser. No. 580,576

Claims priority, application Sweden, Mar. 4, 1983, 8301192

Int. Cl.[4] G06F *15/16*

U.S. Cl. 364—200 **17 Claims**

1. Computer network system for data communication between a plurality of addressable nodes comprising a plurality of links interconnecting the nodes and at least one host processor **(1)** for establishing a session between a first **(13*a*)** and a second **(31)** node in the network for exchanging information units **(94, 96)** between said two nodes in accordance with session parameters defined during a session establishment operation, characterized by means **(158, 138)** for storing session identifier information and means **(132, 152)** for comparing said stored session identifier information with a session identifier field **(106, 112)** in an information unit **(96)** sent by a third node to the second node **(13*a*)** without session establishment between the second node and the third node, whereby an established session between two nodes is shared by a third node.



4,586,135

IMAGE SIGNAL-PROCESSING SYSTEM BASED ON SYNTHETIC APERTURE TECHNIQUE

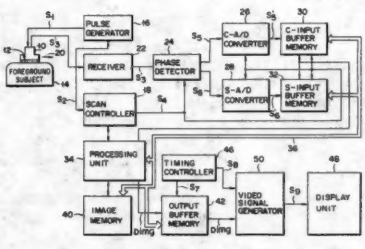
Kenzo Matsumoto, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 15, 1983, Ser. No. 551,934

Claims priority, application Japan, Nov. 20, 1982, 57-203847

Int. Cl.[4] G06F *15/58;* **G06G** *7/60;* **G01N** *29/00*

U.S. Cl. 364—414 **15 Claims**



1. An apparatus for reconstructing an image signal of a foreground subject on the basis of a synthetic aperture technique which, when a radiation is emitted to the foreground subject, receives a hologram having an amplitude correspond-

ing to a wave reflected from the foreground subject, and reconstructs the image signal of said foreground subject from said hologram signal, comprising:

(a) first means for compressing the amplitude of said hologram signal as a first nonlinear processing;

(b) second means for prestoring kernel function data corresponding to said hologram signal in conformity with the synthetic aperture technique, for combining the hologram signal whose amplitude is compressed with the kernel function data, and for performing the convolution integration of a combination of said hologram signal and said kernel function data, thereby producing a reconstructed image signal having an ampltiude; and

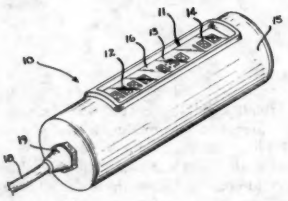
(c) third means for expanding the amplitude of the reconstructed image signal as a second nonlinear processing.

4,586,136

DIGITAL COMPUTER FOR DETERMINING SCUBA DIVING PARAMETERS FOR A PARTICULAR DIVER

John E. Lewis, 4524 Palos Verdes Dr., Rancho Palos Verdes, Calif. 90274

Filed Oct. 31, 1983, Ser. No. 546,976
Int. Cl.[4] G06F *15/42*
U.S. Cl. 364—418 **3 Claims**



1. A device for use by a scuba diver comprising:

means for measuring the pressure of the breathing gas within the diver's tank;

means for measuring the ambient pressure;

means for measuring time;

means for utilizing the measurement of ambient pressure to determine the depth of a diver;

means for determining the change in pressure of the breathing gas within the diver's tank;

means for determining the length of a breathing period for a diver using the diver's tank;

means for utilizing the ambient pressure, the length of a breathing period of a diver, and the change of pressure of the breathing gas to determine a breathing gas consumption factor for a particular diver; and

means for utilizing the pressure of the breathing gas in the diver's tank, the breathing gas consumption factor, and the depth to determine the breathing time remaining to a particular diver at the particular depth.

4,586,137

METHOD FOR GENERATING VARIABLE WELL LOGGING DATA COMPOSITES

Elton Frost, Jr., and Martin T. Evans, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 18, 1982, Ser. No. 434,814
Int. Cl.[4] G01V *1/40*
U.S. Cl. 364—422 **14 Claims**

11. A method to be carried out with a digital computer under programmed control for automatic generation from first and second sets of logging data a plurality of composites of well logs, each said data set corresponding to at least one logging curve representative of a respective logging parameter, said method comprising:

loading a program for said programmed control into a second storage device;

defining a plurality of composite functions including the functions of merge, splice, replace and reorder;

selecting one of said plurality of composite functions;

loading stored data corresponding to said first data set into a first storage device;

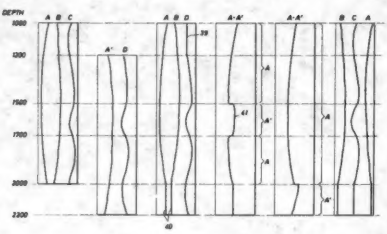
specifying at least one said logging curve in said first data set in response to said selected function;

transferring said specified at least one said logging curve in said first data set to said second storage device;

loading stored data corresponding to said second data set into said first storage device;

specifying at least one said logging curve in said second data set in response to said selected function;

initializing depth variables functionally related to borehole depths at which at least one data sample in said first and second data sets were generated to an initial and final value;



retrieving a data sample defined at said initial value from said second storage device corresponding to said specified at least one logging curve in said first data set;

retrieving a data sample defined at said initial value from said first storage device corresponding to said specified at least one logging curve in said second data set;

storing at least one of said retrieved data samples in a third storage device as a function of said selected one of said composite functions;

incrementing said initial value to a new value; comparing said new value and said final value;

repeating said retrieving, storing, incrementing, and comparing steps until said new value equals said final value; and

specifying an order of appearance for said well logs in said composites, and wherein said storing at least one of said retrieved data samples in said third storage device is in functional relation to said specified order.

4,586,138

ROUTE PROFILE ANALYSIS SYSTEM AND METHOD

Donald J. Mullenhoff, and Stephen W. Wilson, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 29, 1982, Ser. No. 403,161
Int. Cl.[4] G01B *5/28;* G06F *15/20*
U.S. Cl. 364—424 **8 Claims**

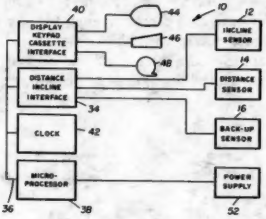
1. A vehicle data acquisition system comprising:

distance measuring means for measuring the distance traveled by a vehicle per unit time;

means for periodically sensing the inclination of the longitudinal axis of the vehicle relative to the horizontal plane;

micro-processor means for digitally recording the measured distance and the sensed inclination, said recorded measured distance and sensed inclination to be used to deter-

mine the profile of a route traveled by the vehicle with said distance measuring means and said inclination sensing



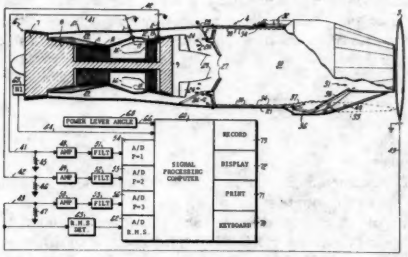
means providing sufficient data to determine true inclination of the vehicle over all portions of the route.

4,586,139

NORMALIZING ENGINE WEAR INDICATION WITH R.M.S. NOISE

David M. Rosenbush, Granby, Conn., and Robert P. Couch, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1982, Ser. No. 453,966
Int. Cl.[4] G01M *15/00*
U.S. Cl. 364—431.02 **2 Claims**



1. Electrostatic diagnostic apparatus for distinctly classifying different events occurring in an operating gas turbine engine, comprising:

electrostatic signal means, including a probe to be disposed in the gas stream of an engine, for providing, when said probe is disposed in the gas stream of an operating engine, a probe signal having a waveshape defined by amplitude variations thereof across a time interval of a given duration in response to electrostatic charge flowing in the gas stream in the vicinity of said probe;

an analog to digital converter connected for response to said electrostatic signal means; and

signal processing means connected to said analog to digital converter

(a) for causing said analog to digital converter to sample the signal provided by said electrostatic signal means in a manner to provide a record of digital signals indicative of the amplitude variations thereof defining the waveshape thereof,

(b) for storing in response to the amplitude of one of said digital signals being in excess of a threshold magnitude, a record comprising a contiguous sequence of said digital signals sufficient to define the waveshape of said probe signal, repetitively, to provide a classification group consisting of a given number of said records,

(c) for providing an R.M.S. noise signal indicative of the R.M.S. noise content of said probe signal,

(d) for providing a time integral signal indicative of the time integral of said R.M.S. noise signal,

(e) for providing a sequence of normalized wear interval signals separated by intervals of time which are a function of said time integral signal,

(f) for counting, beginning at the start of each of said wear intervals, the number of records stored,

(g) for resetting the count of such number of records stored at the beginning of each of said wear intervals, and

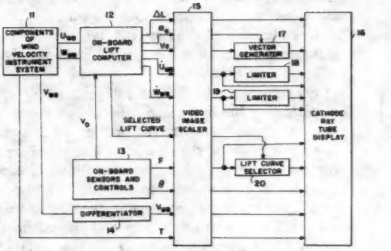
(h) for classifying said records in accordance with characteristics of the waveshapes thereof in the event that said given number of records is stored within said wear interval, and otherwise not classifying said records.

4,586,140

AIRCRAFT LIFTMETER

Ernest W. Millen, Seaford, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 8, 1984, Ser. No. 578,388
Int. Cl.[4] G06F *15/50*; G06G *7/78*
U.S. Cl. 364—433 **20 Claims**



7. A method for controlling an aircraft whenever there are wind anomalies in the path of and a distance from the aircraft comprising the steps of:

generating a first signal proportional to the velocity of the wind in the direction of the aircraft heading and parallel to the Earth's surface at said distance from the aircraft, a second signal proportional to the velocity of the vertical wind at said distance from the aircraft and a third signal proportional to the ground speed of said aircraft:

processing said first, second and third signals to produce a vector of the relative wind velocity on a display;

selecting a lift curve, the lift curve being the locus of points at which the lift is equal to the weight of the aircraft during normal winds; and

displaying said selected lift curve on said display such that the cursor endpoint of the displayed said vector is superimposed on said lift curve during normal winds;

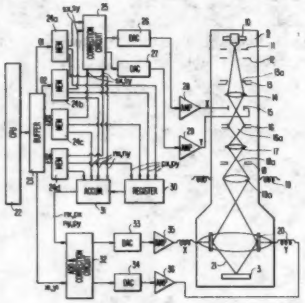
whereby whenever the cursor endpoint of the displayed said vector is not superimposed on said displayed lift curve the pilot knows that wind anomalies are present at said distance from the aircraft and thereby can make appropriate maneuvers with the aircraft.

4,586,141

METHOD AND APPARATUS FOR AN ELECTRON BEAM EXPOSURE SYSTEM

Hiroshi Yasuda; Haruo Tsuchikawa, both of Yokohama; Junichi Kai, Tokyo, and Koichi Kobayashi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 27, 1983, Ser. No. 536,322
Claims priority, application Japan, Sep. 27, 1982, 57-167919
Int. Cl.[4] G06F *15/62*
U.S. Cl. 364—490 **3 Claims**



1. An electron beam exposure method for exposing patterns on a substrate, comprising the steps of:

(a) storing pattern information, including accuracy information, starting position information and pattern size information for the patterns;

(b) storing pattern data, including number data, pitch data and beam size data in dependence upon the pattern information, said step (b) comprising the substeps of:

(bi) dividing each of the patterns into rectangles equal to a maximum size of the beam in dependence upon the accuracy information;

(bii) generating the beam size data;

(biii) adjusting the beam size data to a new beam size if a residual area of the patterns smaller than the maximum beam size remains, the new beam size being smaller than the maximum beam size thereby allowing each of the patterns to be divided into an integer number of new rectangles having a size equal to the new beam size; and

(biv) generating the pitch data and the number data in dependence upon the adjusted beam size data;

(c) selecting the pattern data in dependence upon the accuracy information and the pattern size information;

(d) providing a beam size signal in dependence upon the beam size data;

(e) providing position signals in dependence upon the pitch data, the number data and the starting position information;

(f) deflecting the beam in accordance with the beam size signal; and

(g) deflecting the beam onto the substrate in accordance with the position signals.

4,586,142

PRESSURIZED CABLE-SHEATH LEAK LOCATING INSTRUMENT

Albert O. Cota, 17475 Flanders St., Granada Hills, Calif. 91344, and Dean C. Obray, 624 23rd St., Manhattan Beach, Calif. 90266

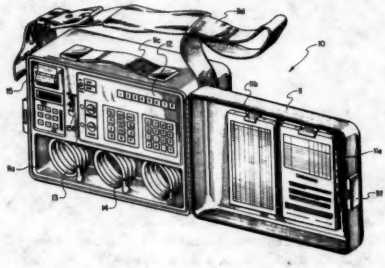
Filed Feb. 25, 1983, Ser. No. 469,790
Claims priority, application Japan, Feb. 23, 1982, 57-28434
Int. Cl.[4] G01M *3/28*
U.S. Cl. 364—507 **19 Claims**

1. A pressurized cable-sheath leak locating instrument comprising:

(a) an air pressurized cable-sheath surrounding a plurality of communication conductors,

(b) means for determining the air pressure in the interior of said pressurized sheath and converting the air pressure to a d-c voltage that is proportional to the air pressure,

(c) means for determining the air flow rate being communicated through the interior of said pressurized sheath and converting the flow rate to a d-c voltage that is proportional to the air flow rate,



(d) means for converting the air pressure and air flow rate d-c voltages to equivalent digital signals, and

(e) an electronics calculator that uses said digital signals in combination with mathemactical constants to solve the following set of equations that when solved provide distance and air flow data respectively that is used to limit the area of search of an air leak in said pressurized cable-sheath:

$$D = \frac{1000\,P}{FR}$$

where

D=maximum distance in feet (meter) of air leak from the pressure source measuring point,

P=pressure in psi (kPa) in cable at a given location,

F=gas-flow rate in SCFH (m^3/hr) in cable sheath,

R=pneumatic resistance per 1000 feet (300 meter) of a particular size and gauge of cable,

$$F = \frac{1000\,(P_1 - P_2)}{dr}$$

where

F=gas-flow rate in SCFH (m^3/hr) in cable sheath,

P_1 and P_2=pressure readings in psi (kPa) of two pressure points in the cable sheath separated by a known distance d,

d=distance in feet (meter) between cable sheath pressure testing valves,

R=pneumatic resistance per 1000 feet (300 meter) of a particular size and gauge of cable.

4,586,143

GAS DETECTING APPARATUS

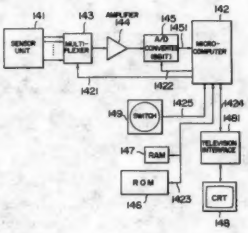
Masayoshi Kaneyasu; Takanobu Noro; Hideo Arima, all of Yokohoma; Mitsuko Ito, Yokosuka; Shoichi Iwanaga, Yokohama; Nobuo Sato, Yokosuka; Akira Ikegami, Yokohama, and Tokio Isogai, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1983, Ser. No. 461,743
Claims priority, application Japan, Mar. 24, 1982, 57-45602
Int. Cl.[4] G01N *27/12*
U.S. Cl. 364—509 **9 Claims**

1. A gas detecting apparatus for detecting at least one kind of

specified constituent gas in a mixed gas made up of a plurality of kinds of constituent gases, comprising:

(a) a plurality of semiconductor gas detecting elements different from each other in a gas detection characteristic based on the conductivity of the element, said detection characteristic of each gas detecting element being exponential to gas concentration and detection outputs from said gas detecting elements with respect to the mixed gas being represented by a linear combintion of said detection outputs with respect to said constituent gases;



(b) a processing device receiving detection outputs from said semiconductor gas detecting elements for processing said detection outputs and previously-stored characterisitc values, said characteristic values indicating a characteristic of each of said semiconduttor gas detecting elements for the mixed gas, said processing device using a linear operation; and

(c) output means operated on the basis of the results of processing performed in said processing device.

4,586,144

PIPING SYSTEM SURVEILLANCE APPARATUS

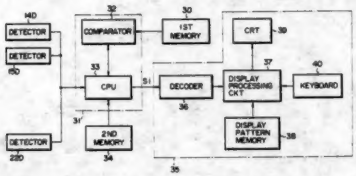
Akira Fukumoto, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 13, 1983, Ser. No. 513,388

Claims priority, application Japan, Jul. 16, 1982, 57-123975

Int. Cl.[4] G01F *9/00*

U.S. Cl. 364—510 **7 Claims**



1. A piping system surveillance apparatus for surveilling a piping system including a plurality of active element means said active element means being moving elements and a plurality of non-active elements said non-active elements being non-moving elements comprising:

first memory means for storing data indicating whether or not fluid is flowing in said active elements constituting a piping system when the piping system is normally operated;

detecting means arranged in at least one of said active elements so as to directly detect a presence or absence of fluid flow on at least one of said active elements and to generate a signal corresponding to the presence or absence of the fluid flow;

second memory means for storing logic formula data for determining a state of at least one of said non-active elements which does not have said detecting means, from the output signal obtained from said detecting means;

data processing means for processing the output signal obtained from said detecting means and the logic formula data read out from said second memory so as to prepare data indicating the presence or absence of the fluid flow with respect to said active element and data indicating the presence or absence of the fluid flow with respect to at least one of said non-active elements;

discriminating means for comparing the data obtained from said data processing means with the data read out from said first memory means, for discriminating normal/abnormal operation in accordance with the data obtained from said data processing means, and for generating discrimination data; and

displaying means having a graphic pattern including display elements corresponding to said elements of said piping system for selectively displaying said display elements in accordance with the data indicating the presence/absence of the flow and the discrimination data.

4,586,145

PHOTOGRAMMETRIC METHOD

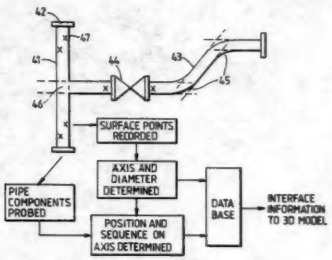
Philip A. Bracewell, Meltham, and Uri R. Klement, Cuddington, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Feb. 2, 1983, Ser. No. 463,304

Claims priority, application United Kingdom, Feb. 17, 1982, 8204569

Int. Cl.[4] G06F *3/14*

U.S. Cl. 364—512 **8 Claims**



1. A method for deriving and storing information about industrial plant structures constructed of a plurality of interrelated, three-dimensional, basic unit shapes, the method comprising:

(a) taking stereo-pair photographs of the structure,

(b) mounting the photographs in a photogrammetry stereo comparator including a co-ordinate readout, a data base, and processing means for processing information in accordance with said data base,

(c) effecting orientation procedures to correlate comparator coordinates to the orientation of the structure,

(d) providing the processing means with a mathematical template for each kind of basic unit shape for which the information is required, each template having variable parameters defining the dimensions and orientation of the shape, said parameters being initialized to nominal values,

(e) selecting a first template corresponding to a first unit shape and entering this first template into the data base,

(f) selecting a further template corresponding to a first unit shape and entering this further template into the data base,

(g) repeating step (f) until templates are entered into the data base for each basic unit shape about which information is required,

(h) specifying in the data base the manner in which the basic unit shapes for which templates are provided are interconnected,

(i) viewing through the stereo comparator a first basic unit

shape depicted in the stereo-pair photographs and selecting a corresponding template,

(j) aligning the comparator with a plurality of points on the viewed basic unit shape in turn and operating the comparator readout means to obtain the co-ordinates of those points,

(k) calculating from the readout co-ordinates the true values for the variable parameters of the corresponding template, and replacing the nominal initial values with these calculated true values, and

(l) repeating steps (i) (j) and (k) for each template selected thereby to obtain the values of the parameters for each basic unit shape and their three-dimensional interrelation in the structure.

4,586,146

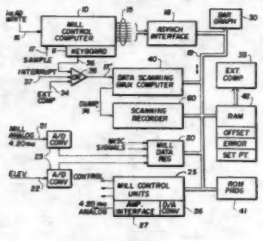
GRINDING MILL CONTROL SYSTEM

Robert F. Dumbeck, Elgin, and Phillip W. Welch, Houston, both of Tex., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 238,710, Feb. 27, 1981, Pat. No. 4,404,640. This application Aug. 8, 1983, Ser. No. 521,252

Int. Cl.[4] B02C *25/00*

U.S. Cl. 364—551 **20 Claims**



1. In a digital computer system for control of operating conditions in a grinding mill complex to conform to a predetermined grinding objective setpoint, the improvement comprising,

an arithmetic computer programmed to arithmetically derive an output control signal to meet said predetermined grinding objective by control of the input feed of a material that affects the grinding mill complex output product as a function of the magnitude of a sensed input signal indicative of a mill complex operating parameter related to the actual flow of that material,

means for providing a plurality of input signals representative of different mill complex operating data sensed relating to different functions of the flow of feed materials,

a plurality of control registers each for providing a respective output control signal effective to control the flow of materials through said complex, which signals are derived from said computer,

a multiplexing computer programmed to sample and sequence said plurality of input signals into said arithmetic computer for derivation of at least one output control signal and to sequence into said corresponding plurality of control registers a control signal calculated by said arithmetic computer, whereby the system controls the feed and flow of materials in the grinding mill complex operations in response to the control signals derived from said sensed input signals.

4,586,147

HISTORY INFORMATION PROVIDING DEVICE FOR PRINTERS

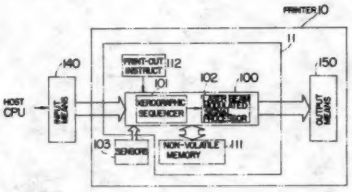
Hiroyuki Tadokoro, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1983, Ser. No. 464,210

Claims priority, application Japan, Feb. 8, 1982, 57-17480

Int. Cl.[4] G06F *15/20, 11/00*

U.S. Cl. 364—550 **10 Claims**



1. A history information providing device for a printer having a print producing section provided with information pick-up means for detecting printing operations and having a programmable control section for controlling said print producing section, said history information providing device comprising:

a non-volatile memory provided in said programmable control section for storing the latest failure and/or maintenance information relating to said print producing section and picked up by said information pick-up means; and

print-out instructing means for producing a print-out instruction to cause said print producing section to print out at least a part of the latest printer history information including said latest failure and/or maintenance information stored in said non-volatile memory.

4,586,148

ARRANGEMENT FOR SCANNING PRINTING PLATES

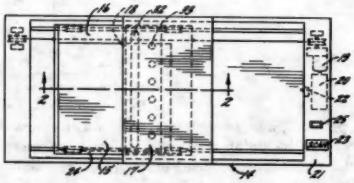
Jurgen Rehder, Waldmohr; Siegfried Schuhmann, Offenbach am Main, and Gerd Steiner, Heusenstamm, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,612

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220800

Int. Cl.[4] B41M *1/00*; G06F *15/40*

U.S. Cl. 364—550 **17 Claims**



1. A scanner for scanning a printing plate to determine the ratio of "printed" to "non-printed" area for the respective inking zones of a printing machine using the printing plate, the machine having a light source and a linear array of photo-sensing elements disposed along a line, said photo-sensing elements receiving light from the source reflected at respective defined resolution elements on the surface of the printing plate, the machine having means for imparting relative motion between the printing plate and the sensor array in a direction substantially perpendicular to said line so that the defined areas on the surface of the printing plate are swept across the printing plate, wherein the improvement comprises,

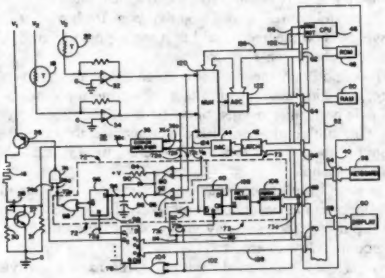
the photo-sensing elements in the array each comprising an electronic photo-sensing device, enclosed within and elongated channel defining an elongated light transmission path extending between the photo-sensing device and the respective resolution element, the channel being divided into a plurality of chambers by diaphragms, the channel and diaphragms being made of low-reflection material.

4,586,149

TEMPERATURE CONTROL SYSTEM FOR CUTANEOUS GAS MONITOR

Gerald T. Stillman, Fullerton; Michael Pawlowski, Chino, and Larry S. McDavid, Anaheim, all of Calif., assignors to Sensormedics Corporation, Anaheim, Calif.

Filed Jul. 5, 1983, Ser. No. 510,150
Int. Cl.[4] G01K *15/00*
U.S. Cl. 364—557 **28 Claims**



1. A temperature control system for a cutaneous gas sensor having a temperature sensing element for producing an output signal indicative of the actual temperature of the sensor, and a heating element, comprising:

(a) a closed loop temperature control circuit for controlling the flow of current through the heating element in accordance with the difference between the output signal of the sensing element and a temperature setpoint signal indicative of a desired temperature of the sensor,

(b) a switching means responsive to a disable signal for interrupting the flow of current through the heating element,

(c) a first temperature monitoring means connected to the sensing element for applying a disable signal to the switching means when the output of the sensing element indicates that the temperature of the sensor has exceeded a first predetermined value,

(d) a programmable control means connected to the sensing element, the switching means and the temperature control circuit, said programmable control means serving as a temperature setting means for generating said temperature setpoint signal, and as a second temperature monitoring means for applying a disable signal to the switching means when the output signal of the sensing element indicates that the temperature of the sensor has exceeded a second predetermined value, and

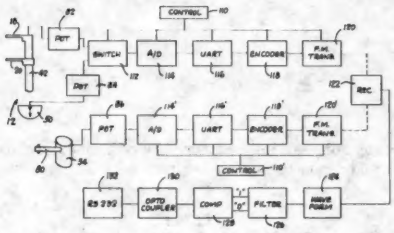
(e) a failure detecting means connected to the programmable control means for applying a disable signal to the switching means when the programable control means fails to operate in the intended manner.

4,586,150

ELECTRONIC MEASURING DEVICE

Frank W. Budzink, Cleveland; James O. Burton, Cleveland Heights, and Frank J. Ahlin, Willoughby Hills, all of Ohio, assignors to Richman Brothers Company, Cleveland, Ohio

Filed Sep. 14, 1983, Ser. No. 532,245
Int. Cl.[4] G01B *7/18, 7/30;* **G01D** *5/16;* **H04L** *23/00*
U.S. Cl. 364—562 **16 Claims**



1. A measuring system comprising:

a hand held unit for measuring a length; said hand held unit including a ruler for measuring the length, means for generating an electric signal related to the length, interface means to convert the electrical signal into a digital signal representation of the length, and transmitter means for converting said digital signal representation into a communication signal suitable for radio communications transmission; and

receiver means remote from the hand held unit including means for receiving said radio communication signal and converting said signal into an electric signal; and a storage unit for storing an indication of said length.

7. A hand held measuring device comprising:

a set of calipers having one arm fixed with respect to and a second arm movable with respect to an elongated ruler to which the arms are secured;

a strip potentiometer coupled to and extending along one surface of the ruler to produce a first signal related to a distance between the first and second arms;

protractor means for computing an angle of said elongated ruler with respect to a reference angle as the calipers are positioned to measure said length, said protractor means including a potentiometer that provides a second signal related to said angle; and

circuitry for converting said first and second signals into digital signals suitable for transmission to a remote unit for storing an indication of said length and angle.

4,586,151

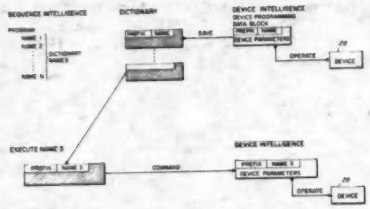
SELF-CONFIGURING COMPUTERIZED ROBOT CONTROL SYSTEM

William J. Buote, Natick, Mass., assignor to Zymark Corporation, Hopkinton, Mass.

Filed Sep. 2, 1983, Ser. No. 528,934
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—513 **13 Claims**

1. A control system for operating a number of different robot modules, the improvement comprising a language-generating and storing means, said language generating means comprising means to receive command-specific operating parameters, from a robot module, and means to transfer said operating parameters, said known robot module identification, and a

selected name for said parameters into a dictionary storage means and program means to activate such operating parameters by using said selected name as a command signal to transfer said parameters to said module.



4,586,152

METHOD AND APPARATUS FOR COUNTING AN INFINITE LENGTH WITH A COUNTER OF FINITE LENGTH

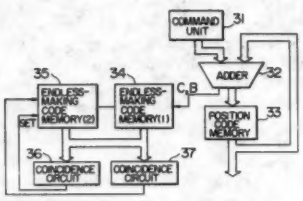
Hiroshi Hayashida, Mito; Kunio Miyashita, Hitachi; Tadashi Takahashi, Hitachi; Shigeki Morinaga, Hitachi, and Kosho Ishizaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 8, 1983, Ser. No. 483,428

Claims priority, application Japan, Apr. 12, 1982, 57-59596

Int. Cl.[4] G06F *1/02*

U.S. Cl. 364—718 **10 Claims**



6. An apparatus for endless counting by addition and subtraction of data comprising:

a first memory for storing a code of a first predetermined number of bits sufficient to represent the maximum value of each coded input expressed according to the binary notation;

a second memory for storing an endless-making code of a second predetermined number of bits of higher order than and contiguous to the less and least significant bits stored in said first memory;

computing means for adding or subtracting the value of the coded input to or from the contents of said first and second memories depending on the input value to be counted and generating the result of computation;

means for applying the result of computation generated from said computing means to said first and second memories;

first circuit means for cleaning the most significant bit of the endless-making code stored in said second memory when the code stored in said second memory has attained a value which will cause an overflow in response to a carry from the contents of said first memory during an adding operation by said computing means; and

second circuit means for setting the most significant bit of the endless-making code stored in said second memory when the code stored in said second memory has attained a value which will cause an underflow in response to a borrow from the contents of said first memory during a subtraction operation by said computing means.

4,586,153

SERIAL CROSS-CORRELATORS

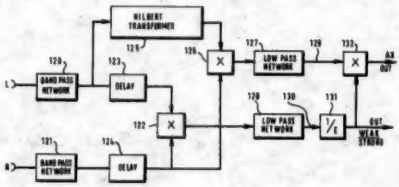
Gilbert L. Hobrough, Westbury, 5 Station Road, Bentley, Farnham, Hampshire, England

Filed Sep. 23, 1983, Ser. No. 535,268

Claims priority, application United Kingdom, Sep. 28, 1982, 8227609

Int. Cl.[4] G06F *15/336*; G06J *1/00*; G06G *7/19*

U.S. Cl. 364—728 **4 Claims**



1. A serial cross-correlator having:

(i) first and second input ports;

(ii) a digital Hilbert transformer, said transformer having an input which is connected to said first input port;

(iii) first delay means, said first delay means having an input which is connected to said first input port in parallel with said Hilbert transformer;

(iv) second delay means, said second delay means having an input which is connected to said second input port;

(v) first mulitplier means, said first multiplier means having inputs which are respectively connected to the output of said Hilbert transformer and to the output of said second delay means;

(vi) second multiplier means, said second multiplier means having inputs which are respectively connected to the output of said first delay means and to the output of said second delay means; and

(vii) divider means, said divider means having a dividend input which is connected to the output of said first multiplier means and a divisor input which is connected to the output of said second multiplier means;

(viii) whereby the delays produced by said first and second delay means are each made equal to the average mean delay in said Hilbert transformer and whereby: (1) the output from the first multiplier means is an orthogonal correlator output signal having both level and slope, (2) the output from the second multiplier means is a correlator output signal having level only, and, (3) the levels of the orthogonal correlator signal and the correlator signal are both proportional to the levels of the signals transmitted to the first and second input ports and the divided output signal from the divider means is independent of input signal level but retains the slope of the orthogonal correlator signal.

4,586,154

DATA WORD NORMALIZATION

David N. Berry, Worthing, United Kingdom, assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,058

Claims priority, application United Kingdom, Feb. 2, 1982, 8203927

Int. Cl.[4] G06F *7/38*

U.S. Cl. 364—748 **2 Claims**

1. An apparatus for data word normalisation for reduction of data to a standard form by shifting comprising:

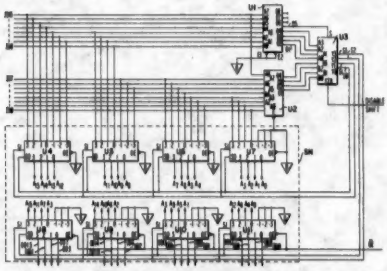
means for providing inputs for a multi-digit data word;

memory means connected to said input means and responsive to the inputs in said input means to produce a control output for asynchronously controlling the number of shifts required to normalize the word;

a parallel shifter connected to said memory means responsive to the data word and the control output to provide a shifter output word;

a first memory responsive to a first, most significant, portion to the input word;

a second memory responsive to the least significant portion of said input word;



a multiplexer connected to said first and said second memories and controlled by the first memory and second memory to select the control output of that memory connected to the most significant group of inputs containing significant data; and

means for normalizing signed numbers, the signed digit of the data word being supplied to each memory.

4,586,155

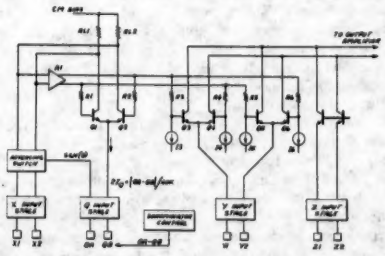
HIGH-ACCURACY FOUR-QUADRANT MULTIPLIER WHICH ALSO IS CAPABLE OF FOUR-QUADRANT DIVISION

Barrie Gilbert, Forest Grove, Oreg., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Feb. 11, 1983, Ser. No. 465,718

Int. Cl.[4] G06G 7/16

U.S. Cl. 364—841 **28 Claims**



1. In a four-quadrant multiplier of the type comprising a first pair of transistors interconnected to handle one input of the multiplier; and second and third pairs of transistors interconnected with said first pair of transistors to form respective transistor quads to handle another input of the multiplier; each of said transistors having first and second main electrodes and a control electrode;

that improvement in such multiplier comprising:

circuit means applying adjustable PTAT compensation voltages to the control electrodes of at least one of said pairs of transistors to null inherent V_{BE} mismatch, said circuit means comprising adjustable resistors connected to said control electrodes;

PTAT current sources connected to said resistors respectively to develop said compensating voltages;

said second and third transistor pairs being connected with common emitters which are coupled to said other multiplier input; and

amplifier means connected to the remote ends of said resistors to drive said bases responsive to said one multiplier input.

4,586,156

WORD PROCESSING SYSTEM FOR DISPLAYING INFORMATION IN FULL CHARACTER AND LAYOUT MODE

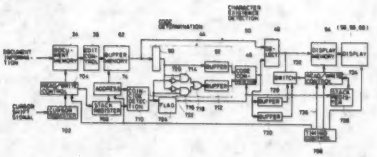
Kazuyuki Kurata; Kiyozi Motoki, both of Nara, and Yoshihiro Yamada, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 357,081, Mar. 11, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,222

Claims priority, application Japan, Mar. 17, 1981, 56-39073; Sep. 17, 1981, 56-147100

Int. Cl.[4] G06K 9/00; G06F 3/14

U.S. Cl. 364—900 **4 Claims**



1. A word processing display system for selectively displaying information in full character and layout modes, comprising:

input means for providing document information including character codes;

document memory means, responsive to said input means, for storing said document information provided thereby;

display memory means for storing display data as display codes representative of desired information to be displayed, said display memory means storing said document information therein when in said full character mode;

pattern generator means for storing patterns representing characters therein and for converting said display codes stored in said display memory means into said patterns specified by said display codes;

display means for displaying desired information;

display control means for reading out said display data stored in said display memory means and applying said display codes stored therein to said pattern generator means for generating patterns and for controlling said pattern generation means;

said pattern generation means being responsive to said display control means to supply said patterns to said display means for display thereby;

layout mode selection means for selecting said layout mode;

layout display code generation means responsive to selection of said layout mode by said layout mode selection means for developing layout codes representative of character sized visual indicators of the presence or absence of characters at more than one character location, said layout display code generation means developing said layout codes from said document information stored in said document memory means and supplying said layout codes to said display memory means for storage therein;

said pattern generator means also storing patterns therein representative of said character signal visual indicator and converting said layout codes into said patterns specified thereby.

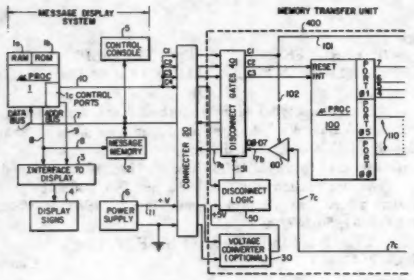
4,586,157
MEMORY TRANSFER UNIT

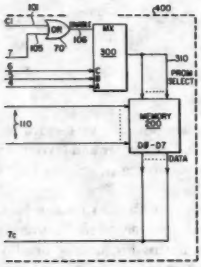
Robert E. Rector, Richardson; Larry T. Taylor; Scott H. Yarberry, both of Plano, and Richard J. Grassi, Royse City, all of Tex., assignors to Gulton Industries, Inc., Metuchen, N.J.

Continuation-in-part of Ser. No. 558,120, Dec. 5, 1983. This application Dec. 8, 1983, Ser. No. 559,834

Int. Cl.[4] G06F *3/023, 9/24;* **G08B** *5/00*

U.S. Cl. 364—900 **9 Claims**





1. A method for changing a repertoire of messages stored in message memory means for storing messages displayable by a circuitry-containing message display system wherein said message memory means comprises a programmable memory which is alterable by electronic means, said method including the sequential steps of:

providing a portable circuitry-containing memory transfer unit including a memory containing a new repertoire of messages which is desired to be displayable by said message display system;

connecting said memory transfer unit to said message display system; and

changing the data stored in said message memory to correspond to the data stored in said memory transfer unit memory.

4,586,158
SCREEN MANAGEMENT SYSTEM

Richard T. Brandle, Dallas, Tex., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,515

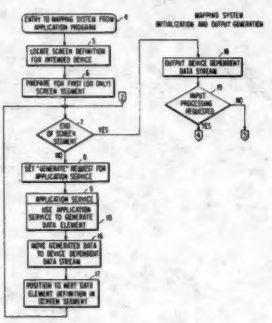
Int. Cl.[4] G06F *3/153;* **G09G** *1/00*

U.S. Cl. 364—900 **4 Claims**

1. A method of structuring a screen management system for variable output wherein an application program can present as much information as possible on any video display device without specifiying display geometry or adjusting for said geometry in said application program, said screen management system including a mapping service which accesses the screen definition for an intended video display device and said application program including application services, said method comprising the steps of:

establishing a dialog between said mapping service and said application services; and

using said application services by said mapping service to


ENTRY TO MAPPING SYSTEM FROM APPLICATION PROGRAM
MAPPING SYSTEM INITIALIZATION AND OUTPUT GENERATION
LOCATE SCREEN DEFINITION FOR INTENDED DEVICE
OUTPUT DEVICE DEPENDENT DATA STREAM
PREPARE FOR FIRST (OR ONLY) SCREEN SEGMENT
INPUT PROCESSING REQUESTED
END OF SCREEN SEGMENT
YES
NO
SET "GENERATE" REQUEST FOR APPLICATION SERVICE
APPLICATION SERVICE USE APPLICATION SERVICE TO GENERATE DATA ELEMENT
MOVE GENERATED DATA TO DEVICE DEPENDENT DATA STREAM
POSITION TO NEXT DATA ELEMENT DEFINITION IN SCREEN SEGMENT

generate a device dependent data stream such that a maximum quantity of information is generated and processed for display on said intended video display device based on said screen definition which specifies the quantity, order and placement of the application program's information on the screen.

4,586,159
DIGITAL BUS ADAPTOR

Virgil E. Thomas, Inyokern, and Charles R. Jones, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1983, Ser. No. 553,469

Int. Cl.[4] G06F *5/00;* **H04L** *7/00*

U.S. Cl. 364—900 **2 Claims**

1. A bus adaptor digital circuit which comprises:

a first data serial-in-parallel-out shift register having at least one input and a data output;

a first parallel-in-serial-out shift register having an input electrically connected to the data output of the first serial-in-parallel-out shift register and having a data output;

a second parallel-in-serial-out shift register having a data input and a data output;

a data multiplexer having a data output electrically connected to the data input of the second parallel-in-serial-out shift register and having a data input;

a first-in-first-out memory having a data output electrically connected to the data input of the multiplexer and having a data input;

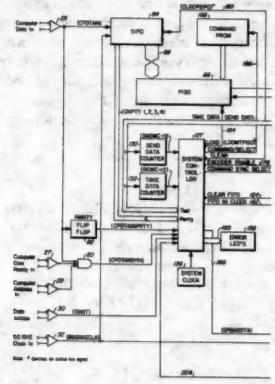
a second serial-in-parallel-out shift register having a data output electrically connected to the data input of the first-in-first-out memory and having a data input;

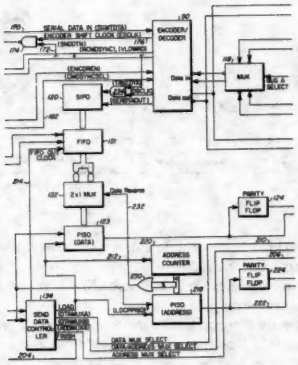
an encoder/decoder/interface having a data input electrically connected to the data output of the first parallel-in-serial-out shift register, a data output electrically connected to the data input of the second serial-in-parallel-out shift register, and having a data input/output; and

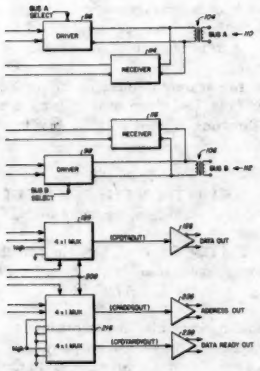
a system control logic, including:

a system controller having first, second, third, fourth and fifth inputs, having a sixth input electrically connected to the first serial-in-parallel-out shift register, having a seventh input electrically connected to the encoder/decoder/interface, having eighth and ninth inputs, having a first output, having second and third outputs electrically connected to the first-in-in-first-out memory, having a fourth and fifth outputs electrically connected to the encoder/decoder/interface, having a sixth output electrically connected to the first serial-in-parallel-out shift register, hav-

ing a seventh output, having an eighth output electrically connected to the first parallel-in-serial-out shift register, and having a ninth output;







a send data controller having a first input electrically connected to the ninth output of the system controller, having a second input, having a first output electrically connected to the second input of the system controller, having second, third and fourth outputs, having a fifth output electrically connected to the second parallel-in-serial-out shift register and having a sixth output electrically connected to the first-in-first-out memory;

an address parallel-in-serial-out shift register having a first input electrically connected to the fifth output of the send data controller, having second and third inputs, and having an output;

a command PROM having an input electrically connected to the seventh output of the system controller, and having an output electrically connected to the first parallel-in-serial-out shift register;

an address counter having an input electrically connected to the fifth output of the send data controller, and having an output electrically connected to the third input of the address parallel-in-serial-out shift register;

an OR gate having an input electrically connected to the output of the address counter, and having an output electrically connected to the data multiplexer;

a first parity flip-flop having an output electrically connected to the fifth input of the system controller and having an input;

a first AND gate having an output electrically connected to the fourth input of the system controller and having first, second and third inputs;

a first line receiver having first and second inputs and having an output electrically connected to the first serial-in-parallel-out shift register, the input of the first parity flip-flop and the first input of the first AND gate;

a second line receiver having first and second inputs and having an output electrically connected to the second input of the first AND gate;

a third line receiver having first and second inputs and having an output electrically connected to the third input of the first AND gate;

a fourth line receiver having first and second inputs and having an output electrically connected to the third input of the system controller;

a fifth line receiver having first and second inputs and having an output electrically connected to the first serial-in-parallel-out shift register, the second input of the second parallel-in-serial-out shift register, the second input of the send data controller and the second input of the address parallel-in-serial-out shift register;

a plurality of light-emitting diodes having an input electrically connected to the first output of the system controller;

a send data counter having an input and having an output electrically connected to the ninth input of the system controller;

a take data counter having an input and having an output electrically connected to the eighth input of the system controller;

a second parity flip-flop having an input electrically connected to the second parallel-in-serial-out shift register and having an output;

a third parity flip-flop shift register having an input connected to the output of the parallel-in-serial-out address shift register, and having an output;

a first output multiplexer having a first input electrically connected to the output of the second parity flip-flop, having a second input electrically connected to the second parallel-in-serial-out shift register, having a third input electrically connected to the fourth output of the send data controller, having a fourth input electrically connected to the third output of the send data controller, and having an output;

a second output multiplexer having a first input electrically connected to the output of the third parity flip-flop, having a second input electrically connected to the output of the parallel-in-serial-out address shift register, having a third input electrically connected to the second output of the send data controller, having a fourth input electrically

connected to the third output of the send data controller, and having first and second outputs;

a first line driver having an input electrically connected to the output of the first output multiplexer, and having first and second outputs, and;

a second line driver having an input electrically connected to the first output of the second output multiplexer, and having first and second outputs; and

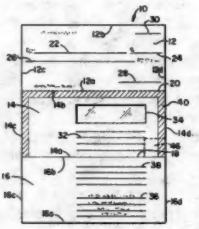
a third line driver having an input electrically connected to the second output of the second output multiplexer, and having first and second outputs.

4,586,160

METHOD AND APPARATUS FOR ANALYZING THE SYNTACTIC STRUCTURE OF A SENTENCE

Shin-ya Amano, and Hideki Hirakawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 5, 1983, Ser. No. 482,195
Claims priority, application Japan, Apr. 7, 1982, 57-57920
Int. Cl.[4] G06F *15/38*; G10L *1/00*
U.S. Cl. 364—900 **9 Claims**



1. A method for analyzing the syntactic structure of a sentence used as an input to a natural language processing system, said method comprising the steps of:

receiving the input sentence formed of a plurality of input words;

retrieving and detecting the presence of defined words among a limited number of prestored words in a dictionary section of said natural language processing system in order to assign to the input words syntactic categories which are prestored together with the prestored words in said dictionary section, said defined words respectively corresponding to the input words;

checking whether there exists among the input words any undefined words for which there are no corresponding defined words in said dictionary section; and

assigning to an undefined word in the input sentence at least one syntactic category which satisfies grammar rules for the input sentence, independent of the dictionary consultation, said grammar rules being satisfied only when the syntactic categories of the input words are arranged in a predetermined pattern, thereby generating a syntactic analysis result of the input sentence;

wherein said step of assigning includes:

a step of assumptively selecting a reference syntactic category, from among a plurality of prepared reference syntactic categories, to assign said category to said undefined word included in the input sentence, said input sentence coinciding with a predetermined grammar rule;

a grammar rule analysis step of determining whether a grammatical relationship between said undefined word applied to said one reference syntactic category in the input sentence and said input words satisfies said predetermined grammar rule; and

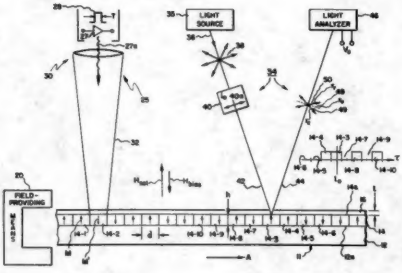
a reference category reapplication step of assumptively selecting another reference syntactic category, from among the reference syntactic categories, to reassign the category to said undefined word when said another reference syntactic category applied to said undefined word has failed to coincide with the grammar rule of said input sentence in the configuration of the syntactic categories applied to said input words by said dictionary consultation.

4,586,161

PERMANENT THERMO-MAGNETIC RECORDING OF BINARY DIGITAL INFORMATION

Raymond E. Skoda, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 11, 1983, Ser. No. 493,494
Int. Cl.[4] G11C *11/42*
U.S. Cl. 365—122 **15 Claims**



1. A method for non-erasable storage of binary digital information, comprising the steps of:

(a) providing a planar thin-film recording layer of a thermomagnetic recording material;

(b) temporarily subjecting the layer to a bias magnetic field, of magnitude less than a saturation field magnitude and passing through at least a domain in which a bit of information is to be recorded;

(c) temporarily heating the layer in at least the area thereof defining a domain in which a binary state is to be recorded, while the bias magnetic field is present, to a temperature within a range predetermined to cause a bit of information to be substantially permanently stored in that domain; and

(d) cooling the heating domain in the presence of the bias magnetic field, to induce in that domain a net magnetic field of direction aligned with the bias magnetic field.

4,586,162

BIT PATTERN CHECK CIRCUIT

Masao Mural, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,458
Claims priority, application Japan, Dec. 28, 1982, 57-231049
Int. Cl.[4] A11C *13/00*
U.S. Cl. 365—51 **6 Claims**

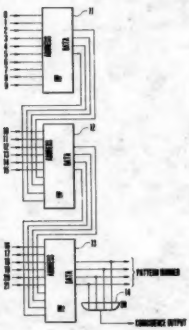
1. A bit pattern check circuit comprising:

means for spacially dividing a bit pattern of N bits into M groups of bits, the arrangement of said groups and the bits within said groups being adapted to retain the original bit pattern;

a plurality of memory devices connected as a first and following stages, each group of bits having a single corresponding stage;

said memory device of a first stage being connected to receive into its addresses the first group of bits;

memory devices in subsequent stages being adapted to receive into certain of their addresses all bits in a corresponding one of said M groups of bits and in certain other of their addresses the outputs of memory devices of preceding stages, whereby the last stage stores data respectively representing an identification of all prior groups of bit patterns by prior respective memory devices; and



means connected to the last stage memory device for detecting coincidence of the inputted bit patterns in accordance with a content of the last stage memory device.

4,586,163

MULTI-BIT-PER-CELL READ ONLY MEMORY CIRCUIT

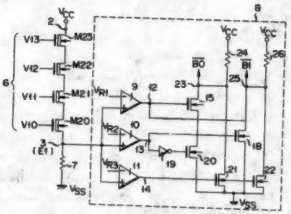
Hideharu Koike, Yokohama, Japan, assignor to Toshiba Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 1, 1983, Ser. No. 510,225

Claims priority, application Japan, Sep. 13, 1982, 57-158145

Int. Cl.[4] G11C *7/00, 11/40*

U.S. Cl. 365—104 **4 Claims**



1. A multi-bit-per-cell ROM circuit comprising:

a memory circuit including a plurality of series-connected depletion mode MOS transistors each of which stores data including at least two bits in the form of a threshold voltage;

first connecting means for connecting a first terminal of said memory circuit to a first power source;

second connecting means for connecting a second terminal of said memory circuit to a second power source;

addressing means which applies a zero voltage to the gate electrode of one selected depletion mode MOS transistor, applies said first power source voltage to the gate electrodes of the remaining depletion mode MOS transistors, and produces at said second terminal an output voltage equal to an absolute value of the threshold voltage of said selected depletion mode MOS transistor; and

converting means for converting said output voltage into binary coded data.

4,586,164

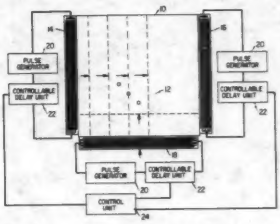
RANDOM ACCESS MEMORY DEVICE UTILIZING PHASE CHANGE MATERIALS

Dayton D. Eden, Dallas, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Apr. 12, 1984, Ser. No. 599,459

Int. Cl.[4] G11C *11/42, 13/04*

U.S. Cl. 365—127 **25 Claims**



1. A memory device comprising:

two films of phase change material disposed one above the other, said material exhibiting an optically discernible phase change from a first phase to a second phase at any portion thereof subjected to a selected external stimulus and exhibiting hysteresis such that said optically discernible phase change at any such portion is substantially unchanged after said selected external stimulus is removed;

first means for providing said selected external stimulus to a plurality of portions of a first of said two films of phase change material;

second means for providing said selected external stimulus to a selected portion of a second of said two films of phase change material, said selected portion of said second film of phase change material underlying a particular portion of said first film of phase change material;

a source of radiant energy disposed adjacent to said first film of phase change material, said radiant energy exhibiting a first transmission characteristic through said first phase of said phase change material and a second transmission characteristic through said second phase of said phase change material; and

detector means disposed adjacent to said second film of said phase change material for detecting radiant energy transmitted through said selected portion of said second film of phase change material wherein the phase of said particular portion of said first film of said phase change material may be ascertained.

4,586,165

THERMO-OPTIC INFORMATION WRITING PROCESS AND INFORMATION SUPPORT FOR IMPLEMENTING THIS PROCESS

Jean Cornet; Jean-Claude Lehureau, and Henriette Magna, all of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 226,804, Jan. 21, 1981, Pat. No. 4,405,994. This application Jul. 11, 1983, Ser. No. 512,672

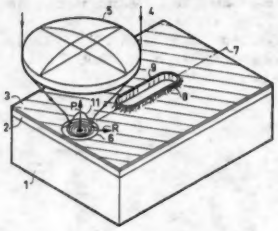
Claims priority, application France, Jan. 23, 1980, 80 01425

Int. Cl.[4] G11C *11/46*

U.S. Cl. 365—126 **13 Claims**

1. In a thermo-optic information writing process consisting in heating superficially in a first writing phase by means of a focused radiation beam modulated in intensity a thermosensitive information support comprising a metal layer which covers an organic layer deposited on a substrate, the heat energy released in the metal layer by impact of the beam causes local expansion without change of state of the organic layer; this expansion creating a first relief in the metal layer by stretching situated beyond the elastic limit and short of the rupture elon-

gation of the ductile material forming said metal layer and heating superficially in a second writing phase to modify said



first relief locally by a second relief more accentuated than said first relief.

4,586,166

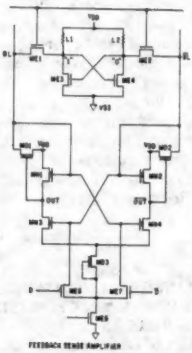
SRAM WITH IMPROVED SENSING CIRCUIT

Ashwin H. Shah, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1983, Ser. No. 528,368

Int. Cl.[4] G11C *11/40*

U.S. Cl. 365—154 **14 Claims**



1. A memory comprising:

(a) an array of memory cells, each memory cell being selectively accessible to provide a differential current signal at a pair of output nodes thereof;

(b) a plurality of bit lines, said bit lines being selectively connected in pairs to said respective pairs of output nodes of a plurality of said cells;

(c) a plurality of bit line loads, one pair of said bit line loads being connected to each pair of said bit lines; and

(d) means responsive to said differential current signal applied to said respective corresponding pair of bit lines by a respective one of said cells which has been selected for dynamically varying the impedance of said bit line loads.

4,586,167

SEMICONDUCTOR MEMORY DEVICE

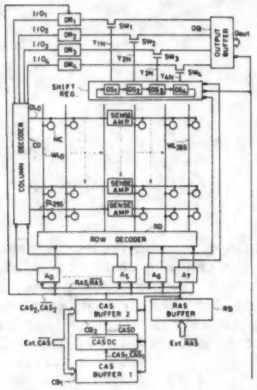
Kazuyasu Fujishima; Kazuhiro Shimotori; Hideyuki Ozaki, and Hideshi Miyatake, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 4, 1984, Ser. No. 568,138

Claims priority, application Japan, Jan. 24, 1983, 58-11178; Jan. 26, 1983, 58-12501

Int. Cl.[4] G11C *13/00*

U.S. Cl. 365—189 **12 Claims**



1. A semiconductor memory device with a memory array for storing data, said data being read out in response to an external row address strobe signal and an external column address strobe signal, said semiconductor memory device comprising:

internal row address strobe signal generator means for generating a signal synchronous with said external row address strobe signal;

first internal column address strobe signal generator means for generating a signal synchronous with said external column address strobe signal;

external column address strobe signal discriminating means responsive to the output of said first internal column address strobe signal generator means and said external column address strobe signal for determining whether the length of time in which said external column address strobe signal is at a given level is longer than a predetermined length of time, and generating an output representative of results of such discrimination;

data address signal generator means responsive to the output of said internal row address strobe signal generator means and the output of said external column address strobe signal discriminating means for generating an address signal in connection with data to be read out from said memory array;

read out means responsive to the output of said data address signal generator means for reading out a plurality of data from said memory array; and

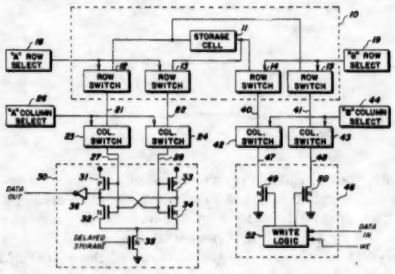
output means responsive to a portion of the output of said data address signal generator means, the output of said first internal column address strobe signal generator means and the output of said external column address strobe signal discriminating means for outputting at least one of the plurality of said data read out from said read out means.

4,586,168

DUAL PORT MEMORY SENSE AMPLIFIER ISOLATION

Richard H. Adlhoch, Tempe, and James Ward, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 12, 1983, Ser. No. 560,628
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—189 8 Claims



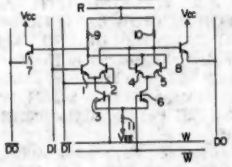
1. A memory having dual read and write capability, comprising: a storage cell having a true signal line and a complement signal line coupled thereto; first means for controllably coupling the true and complement signal lines from the storage cell to bit sense lines; a sense amplifier for receiving data from the bit sense lines and temporarily latching the data therein; second means for controllably coupling the bit sense lines to the sense amplifier; third means for controllably coupling the true and complement signal lines from the storage cell to access lines; circuitry for writing data into the storage cell; and fourth means for controllably coupling the access lines to the circuitry for writing.

4,586,169

SEMICONDUCTOR MEMORY CIRCUIT AND LARGE SCALE INTEGRATED CIRCUIT USING THE SAME

Hiroyuki Itoh, Kokubunji; Akira Masaki, Tokyo; Hiroki Yamashita, Ome, and Satoshi Hososaka, Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,723
Claims priority, application Japan, Nov. 16, 1981, 56-182268
Int. Cl.[4] G11C *7/00, 11/40, 15/00*
U.S. Cl. 365—190 14 Claims



5. A semiconductor memory circuit comprising:

a first transistor circuit connected to a readout word line, said first transistor circuit for holding a predetermined data on the basis of the conductive state of a transistor in said first transistor circuit;

a second transistor circuit connected to said first transistor circuit and a pair of data input lines, said second transistor circuit for controlling the conductive state of a transistor of said first transistor circuit in accordance with signals applied to said data input lines;

a third transistor circuit connected to said first and second transistor circuits and responsive to a pair of write-in word lines, said third transistor circuit for activating a selected one of said first and second transistor circuits in accordance with differential signals applied to said write-in word lines; and

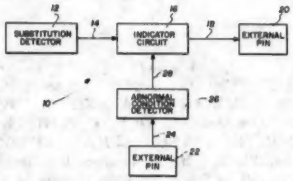
an output circuit connected to said first transistor circuit and a pair of data output lines, said output circuit for outputting said predetermined data held by said first transistor circuit to said data output lines.

4,586,170

SEMICONDUCTOR MEMORY REDUNDANT ELEMENT IDENTIFICATION CIRCUIT

James E. O'Toole, and Robert J. Proebsting, both of Carrollton, Tex., assignors to Thomson Components-Mostek Corporation, Carrollton, Tex.

Continuation of Ser. No. 275,058, filed as PCT US81/00137, Feb. 2, 1981, published as WO82/02793, Aug. 19, 1982, § 102(e) date Feb. 2, 1981, abandoned. This application Apr. 16, 1984, Ser. No. 600,208
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—200 20 Claims



19. In a semiconductor memory integrated circuit having a plurality of original circuit elements and a plurality of redundant circuit elements for substitution for ones of the plurality of original circuit elements and the memory receiving address signals and having an external pin, a test circuit comprising:

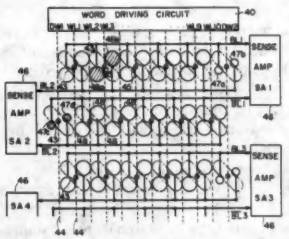
means for indicating at the external pin whether one of the plurality of redundant circuit elements has been substituted for a defective one of the plurality of original circuit elements when the defective one of the plurality of original circuit elements is addressed.

4,586,171

SEMICONDUCTOR MEMORY

Kazuyasu Fujishima, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,584
Claims priority, application Japan, Jun. 15, 1981, 56-92621
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—205 13 Claims



1. A semiconductor folded bit line memory for a plurality of bits comprising:

a plurality of word lines comprised of a metal and arranged in parallel with each other in a predetermined direction,

at least first through fourth sequentially arranged bit lines arranged in parallel with each other and forming a plurality of folded bit line pairs in a direction generally orthogonal to said predetermined direction,

a plurality of memory cells, each of which is arranged in correspondence with one of a plurality of cross points between each of said word lines and said bit lines,

each of said bits being structured as an interconnected pair of first and second ones of said memory cells having signal path connections to said first and third bit lines or to said second and fourth bit lines for redundant storage of data in a complementary manner;

first and second sense amplifying means connected to said first and third bit lines and to said second and fourth bit lines, respectively, thereby forming said first and third bit lines into one pair of folded bit lines and forming said second and fourth bit lines into another pair of folded bit lines, said sense amplifying means operable for amplifying a signal applied to said respective bit lines from selected first and second memory cells.

4,586,172

ADAPTABLE FILTERING DEVICE AND METHOD FOR FILTERING SONAR SIGNALS TO REMOVE REVERBERATION SIGNALS DUE TO VEHICLE SPEED AND TRIM AND THE SEA SURFACE AND SEA BOTTOM

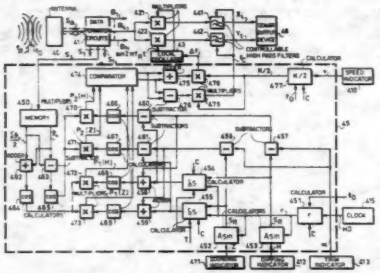
Jean L. Vernet; Philippe Bayle; Georges G. Bienvenu, and Gérard Vernay, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 21, 1983, Ser. No. 487,280

Claims priority, application France, Apr. 23, 1982, 82 07066

Int. Cl.⁴ G01S *7/66, 15/02*

U.S. Cl. 367—97 **13 Claims**



1. A method for filtering sonar signals to eliminate reverberation signals caused by the sea bottom, the sea surface, and the speed and trim of the sonar carrier, said sonar carrier having (a) an antenna which transmits and receives sonar signals, (b) a speed detector, (c) a trim detector, (d) a depth detector, (e) a distance-to-sea bottom detector, and (f) a sonar output device, comprising the steps of:

forming paths corresponding to distinct directions of sonar signals received by said antenna, each path having a path signal B_i;

controllably filtering the path signals to substantially eliminate reverberation signals caused by said sea bottom, said sea surface, and the speed and trim of said sonar carrier, and providing a filtered signal to said sonar ouput device;

controlling said filtering step by: (a) receiving a speed signal v, a trim signal α, a depth signal H, and a distance-to-sea bottom signal Z from said detectors, (b) calculating for each path a central Doppler-shift frequency Δf_i and a cut-off frequency f_{ci}, and (c) supplying Δf_i and f_{ci} to said filtering step.

4,586,173

OPTICAL DISK

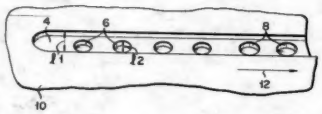
Hideo Ando, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 8, 1983, Ser. No. 511,963

Claims priority, application Japan, Jul. 12, 1982, 57-121004

Int. Cl.⁴ G11B *7/24*

U.S. Cl. 369—275 **10 Claims**



1. A laser beam readable optical disk comprising:

a disk-shaped plate having a first light reflective surface;

a tracking guide defined by a groove which is so formed on said first light reflective surface of the plate as to continuously extend along the circumference of the plate, said groove having a flat light reflective bottom surface and a depth of substantially

$$\left(\frac{2n-1}{4}\lambda - \frac{\lambda}{8}\right),$$

where λ is the wavelength of a laser beam converged on the optical disk, and n is an integer ənd a width of substantially w0/2, where w0 is the diameter of a laser beam spot formed on the optical disk;

first pits formed on said bottom surface of the groove, to reflect light, having a width narrower than that of the tracking guide said first pits having a depth of

$$\left(\frac{2n-1}{4}\lambda\right),$$

where λ is the wavelength of said laser beam converged on the optical disk, and n is an integer the width being substantially w0/3, where w0 is the diameter of a laser beam spot formed on the optical disk.

4,586,174

AUDIO CHANNEL STACKING WITH SPEECH COMPRESSION FOR NARROW BAND TRANSMISSION WITH PROVISION FOR DIALED CALLS

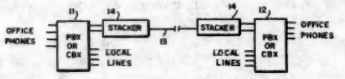
Stephen Wong, Alameda, Calif., assignor to The Variable Speech Control Company ("VSC"), San Francisco, Calif.

PCT No. PCT/US84/01315, § 371 Date Aug. 14, 1984, § 102(e) Date Aug. 14, 1984, PCT Pub. No. WO85/00903, PCT Pub. Date Feb. 28, 1985

Continuation-in-part of Ser. No. 523,702, Aug. 16, 1983, abandoned. This PCT application Aug. 14, 1984, Ser. No. 646,501

Int. Cl.⁴ H04J *1/00, 15/00*

U.S. Cl. 370—69.1 **6 Claims**



1. A terminal for two way telephone communication of two voice messages over a single voice circuit comprising;

first and second transmitting voice channel input terminals;

first and second speech compressors coupled respectively to

said input terminals for reducing the spectrum of the voice signals in each channel to the lower half of the bandwidth of said voice circuit;

a first carrier frequency oscillator for supplying a first high frequency relative to the voice spectrum;

first balanced modulator means for modulating said first carrier frequency with the compressed voice signal of said second channel and producing a first supressed carrier side band output;

means for selecting the lower side band of said output;

means for generating a second carrier frequency offset by the bandwidth of said circuit from said first carrier frequency;

first balanced demodulator means responsive to said lower sideband output and said second carrier frequency to produce the compressed voice signal of said second channel offset by half the bandwidth of said circuit;

means for selecting said lower side band offset in the upper half of said circuit bandwidth;

means for summing the lower half bandwidth compressed voice signal in said first channel with the offset compressed voice signal of said second channel in the upper half bandwidth to provide an output signal of the combined upper and lower half bandwidth signals to an output terminal;

means for coupling the combined signal to said voice circuit;

a receiving voice circuit input terminal;

a bandpass filter for passing signals in said upper half bandwidth;

a lowpass filter for passing signals in said lower half bandwidth;

means coupling said receiving voice circuit input terminal to the inputs of said bandpass filter and said lowpass filter;

second balanced modulator means responsive to the output of said bandpass filter and said second carrier frequency for producing a second supressed carrier single sideband signal offset above said second carrier by half said voice circuit bandwidth;

means for selecting said offset single side band signal from said second modulator;

second balanced demodulator means responsive to said second suppressed carrier selected single sideband signal and said first carrier frequency for producing said upper half bandwidth signal as a sideband at said second carrier;

means for detecting said sideband of said second carrier at baseband; and

first and second speech expanders coupled respectively to the outputs of said lowpass filter and said detected baseband output to produce separate baseband voice spectrum signal outputs from the upper and lower half bandwidth signals coupled to said input terminal.

4,586,175

METHOD FOR OPERATING A PACKET BUS FOR TRANSMISSION OF ASYNCHRONOUS AND PSEUDO-SYNCHRONOUS SIGNALS

Charles J. Bedard, Los Altos; Prem C. Jain, Fremont, and Samuel F. Wood, Los Altos, all of Calif., assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 30, 1984, Ser. No. 605,722
Int. Cl.[4] H04J *3/26*
U.S. Cl. 370—85 **5 Claims**

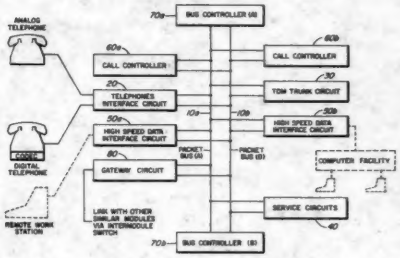
1. A method of arbitrating access to a packet bus for transmission of signals of both synchronous and asynchronous natures between a plurality of ports connected thereto, comprising the steps of:

(a) defining bus cycles each being of a set time interval for a transmission of a word portion of said signals;

(b) polling each of said plurality of ports one after another for an indication of a transmission requirement of high priority and polling at least some of the ports one after another for an indication of a transmission requirement of lower priority:

(c) in response to each indication of high priority, granting the packet bus for up to and including a predetermined number of consecutively occurring ones of said bus cycles, wherein said predetermined number of bus cycles occur within a predetermined period of time, for transmission of signals from ports indicating a transmission requirement of high priority;

(d) in response to each indication of lower priority, granting the packet bus for an indefinite number of consecutively



occurring ones of said bus cycles, said indefinite number of cycles ocurring within said predetermined period of time, for asynchronous transmission of signals from at least one port indicating a transmission requirement of a lower priority; and

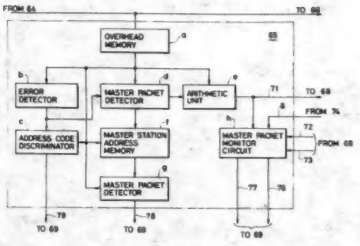
(e) repeating steps (a) through (d) at a frequency sufficient to provide transfer of information of a communication in step (c).

4,586,176

METHOD FOR CORRECTION OF TROUBLE IN DIGITAL SIGNAL TRANSMISSION SYSTEM

Fumio Miyao, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Kanagawa, Japan

Filed May 14, 1984, Ser. No. 609,786
Claims priority, application Japan, Jun. 22, 1983, 58-110968
Int. Cl.[4] H04J *3/02, 3/00*
U.S. Cl. 370—85 **7 Claims**



1. In a digital signal transmission system for effecting time-division multiplexing/circuit switching transmission and reception of signals in the form of packets among a multiplicity of personal stations by causing digital signals transferred on a transmission cable to be fixedly positioned within periodically repeating frames along a time axis and further dividing each of the frames on said time axis into unit blocks thereby providing said personal stations with chances for digital signal transmission, a method for the correction of troubles in said digital signal transmission system which comprises detecting occurrence of a collision between master packets transmitted from two or more stations seeking to take leadership in system timing and, in response to said detection of said collision, discontinuing further transmission of master packets from all the stations which have transmitted said master packets relat-

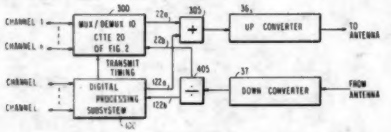
ing to said collision, and causing a station, (exclusive of said stations which have transmitted the master packets relating to said collision) with the highest priority for qualification to function as a new master station to transmit master packets for the purpose of taking over the function of master station, thereby establishing system timing.

4,586,177

INTEGRATED NARROWBAND AND WIDEBAND TDMA NETWORKS

Pradman Kaul, Gaithersburg, Md., assignor to M/A-COM DCC, Inc., Germantown, Md.

Filed Nov. 15, 1983, Ser. No. 557,724
Int. Cl.[4] H04J *3/06*
U.S. Cl. 370—104 **9 Claims**



1. A communication system including a quasi-stationary earth orbiting transponder and at least two groups of earth stations communicating through said transponder comprising:

a first group of stations communicating with each other in a TDMA format through said transponder at a first bit rate, and at a common carrier frequency, one of said first group stations including means for transmitting at least a single reference burst per frame at a second bit rate, lower than said first bit rate,

a second group of stations communicating with each other and with first group stations in a FDMA/TDMA format through said transponder at said second bit rate, and

means for allocating frame capacity by uniquely assigning burst times to stations transmitting at said first bit rate and providing multiple simultaneous burst assignments to stations transmitting at said second bit rate,

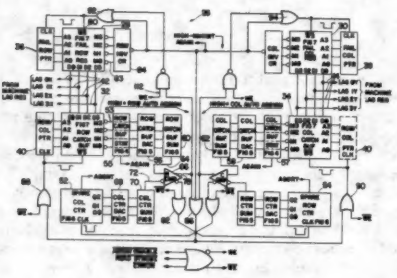
whereby full connectivity throughout all said stations is maintained and efficiency loss is minimized through the multiple simultaneous transmissions from second group stations at said second bit rate.

4,586,178

HIGH SPEED REDUNDANCY PROCESSOR

Gene P. Bosse, Newberry Park, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 6, 1983, Ser. No. 539,511
Int. Cl.[4] G06F *11/20*
U.S. Cl. 371—10 **33 Claims**



1. A method for testing cells that are arrayed in rows and colums to identify faulty cells, and for assigning, as the testing is being executed, redundant rows and columns of cells as replacements for repair of the array, comprising the steps of:

(a) testing the cells sequentially;

(b) comparing during the testing sequence, the row and column coordinates of each cell that is identified as being faulty with those of faulty cells that were identified earlier in the sequence and storing the cell's corrdinates if fewer than both of its coordinates was previously stored; and

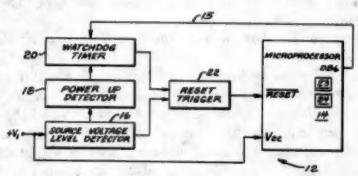
(c) assigning a redundant row to replace a row in which the number of faculty cells thus far identified in the row of a most recently tested cell exceeds the number of redundant columns that have not as yet been assigned, and assigning a redundant column to replace a column in which the number of faculty cells thus far identified in the column of a most recently tested cell exceeds the number of redundant rows that have not as yet been assigned.

4,586,179

MICROPROCESSOR RESET WITH POWER LEVEL DETECTION AND WATCHDOG TIMER

Semir Sirazi, Chicago, and Thomas E. Zinger, Mt. Prospect, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 9, 1983, Ser. No. 560,086
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—12 **8 Claims**



1. A system for controlling the operation of signal processing means, said signal processing means energized by an input voltage and including a programmed memory having a plurality of addressable locations wherein are stored instruction words which define operating sequences and further including logic means coupled to said programmed memory for accessing said plurality of addressable locations for sequentially executing said instruction words in generating a status signal in the form of a single, periodic, continuous pulse train in accordance with said operating sequences during normal operation of said signal processing means, said signal processing means responsive to a reset command provided thereto for maintaining said signal processing means in a reset condition wherein said logic means accesses an initialization addressable location in said programmed memory in setting the execution of the programmed instruction words to a predetermined initial point in said operating sequences from which a predetermined sequence of initializing operations is automatically initiated, said system comprising:

voltage level detection means responsive to said input voltage for generating a first signal when said input voltage does not exceed a predetermined voltage level and a second signal when said input voltage exceeds said predetermined voltage level;

first signal detection means coupled to said signal processing means and responsive to the absence of said status signal and further coupled to said voltage level detection means and responsive to receipt of said first signal for generating a single third signal of predetermined duration, said first signal detection means including a single first timing circuit for generating said single third signal when a pulse is not received from said signal processing means within a predetermined time interval of receipt of an immediately preceding pulse; and

second signal detection means coupled to said signal processing means, to said voltage level detection means and

to said first signal detection means and responsive to said second and single third signals respectively output therefrom for immediately providing a reset command of said predetermined duration to said signal processing means when said input voltage does not exceed said predetermined voltage level or when said status signal is no longer output by said signal processing means for maintaining the signal processing means in the reset condition for said predetermined duration prior to application of an input voltage greater than said predetermined voltage level thereto.

4,586,180

MICROPROCESSOR FAULT-MONITORING CIRCUIT

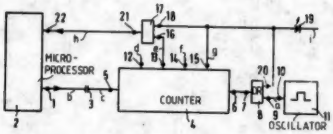
Horst-Günther Anders, and Rudolf Diepold-Scharnitzky, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Feb. 25, 1983, Ser. No. 469,628

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3207633

Int. Cl.⁴ G06F *11/00*

U.S. Cl. 371—14 **5 Claims**



1. A circuit arrangement for monitoring the program operation of a computer means comprising binary counter means having a counting input, a reset input and a plurality of outputs, the reset input being coupled to an output of the computer means, and further including oscillator means, said plurality of outputs of said counter means comprising a lower order output and a higher order output, said lower order and higher order outputs being coupled to respective first and second inputs of first logic circuit means, an output of said logic circuit means being coupled to a reset input of said computer means, said output of said computer means comprising a test signal, the frequency of said test signal being substantially the same as the frequency of the output of said oscillator means when said computer means is functioning properly, and further comprising second logic circuit means having two inputs and an output, the output of said oscillator means being coupled to a first input of said second logic circuit means, the output of said second logic circuit means being coupled to said counting input of said counter means, said higher order output being further coupled to the second input of said second logic circuit means, so that if said lower order output attains a logic one condition, said computer means will be reset and if said higher order output attains a logic one condition, said computer means will be reset and said counter means will be disabled, thereby retaining said logic one condition at said higher order output, thus placing said computer means in a locked condition so that no further operation of said computer means can occur, and further comprising means for generating a fault indication signal coupled to said higher order output of said counter means for indicating a locked condition.

4,586,181

TEST PATTERN GENERATING APPARATUS

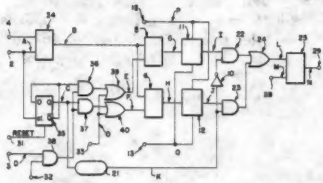
Masao Shimizu, Gyoda, Japan, assignor to Takeda Riken Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1983, Ser. No. 551,429

Claims priority, application Japan, Nov. 15, 1982, 57-200698

Int. Cl.⁴ G01R *31/28*

U.S. Cl. 371—27 **11 Claims**



1. A test pattern generating apparatus for generating a test pattern for testing a logic circuit, comprising

an address generator for generating a series of desired addresses in synchronism with a clock signal,

a plurality of pattern data memories for storing pattern data for generating the test pattern, said pattern data memories have the same pattern data stored in the same respective addresses,

a plurality of registers for respectively accessing in succession different ones of said pattern data memories by the addresses from the address generator,

selection means for selectively taking out the pattern data from said accessed pattern data memories, and

means for providing an address clock alternately to the plurality of registers, in a respective succession corresponding to said accessing of said pattern data memories, when said pattern data is to be read out from said pattern data memories, and for providing an address clock of the same timing commonly to the plurality of registers when said pattern data is to be written into said pattern data memories.

4,586,182

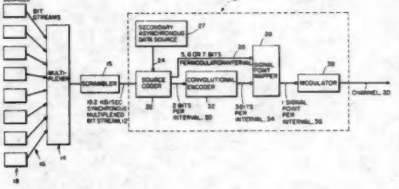
SOURCE CODED MODULATION SYSTEM

Robert G. Gallager, Lexington, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Feb. 6, 1984, Ser. No. 577,045

Int. Cl.⁴ H04L *5/12*; G06F *11/10*

U.S. Cl. 371—30 **27 Claims**



1. Apparatus for sending bits of information over a band-limited channel by modulating a carrier in accordance with a sequence of signal points drawn from a constellation of available signal points, said apparatus comprising

circuitry for sampling a stream of said information bits from a data source in a predetermined sequence of bit time intervals, and for accumulating groups of said information bits for encoding into said signal points, different said

groups having different numbers of said information bits, and

an encoder for encoding at least the bits of each said group into at least one said signal point drawn from said constellation, said encoder being arranged to draw different said available signal points with different probabilities.

4,586,183

CORRECTING ERRORS IN BINARY DATA

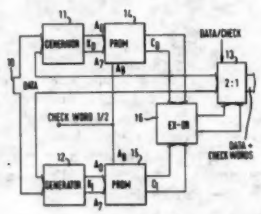
James H. Wilkinson, Tadley, Near Basingstoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,782

Claims priority, application United Kingdom, Dec. 17, 1982, 8235962

Int. Cl.⁴ G06F *11/10*

U.S. Cl. 371—39 **9 Claims**



1. A method of correcting errors in binary data words, the method comprising the steps of: deriving a plurality of check words in dependence on all of a plurality of said data words and in dependence on each other said check word, wherein one said check word is derived by modulo-2 addition and each of the remaining ones of said check words is derived by a respective primitive polynomial generator each using a respective function of an extension field of a common generator polynomial, assembling said plurality of data words and said plurality of check words into a data block, and deriving a parity check block for a plurality of said data blocks.

4,586,184

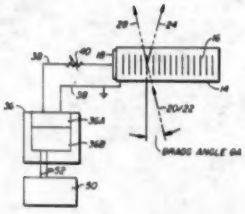
ACOUSTICALLY CONTROLLED FREQUENCY SHIFTED CAVITY FOR ELECTROMAGNETIC RADIATION

Larry Hess, Gaithersburg, Md., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 21, 1983, Ser. No. 544,171

Int. Cl.⁴ H01S *3/10*

U.S. Cl. 372—28 **27 Claims**



1. An electromagnetic radiation frequency shifting apparatus comprising:

(a) electromagnetic radiation directing means for directing radiation in a preferred optical cavity configuration;

(b) electromagnetic radiation frequency shifter means for shifting electromagnetic radiation positioned in said predetermined optical cavity configuration so that when a diffraction limited beam of electromagnetic radiation is directed to said electromagnetic radiation frequency shifter means, a portion of radiation from said diffraction limited beam of electromagnetic radiation which emerges from said electromagnetic radiation shifter means, having its frequency shifted, is also directed to said electromagnetic radiation frequency shifter means by said electromagnetic radiation directing means along essentially the same predetermined optical cavity configuration and in essentially the same direction as said diffraction limited beam of electromagnetic radiation so as to have essentially the same polarization as said diffraction limited beam of electromagnetic radiation; and

(c) frequency varying means for changing the acoustic frequency within the electromagnetic frequency shifter means.

4,586,185

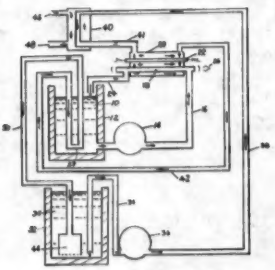
PASSIVE APPARATUS FOR STABILIZING A FLASHLAMP-PUMPED DYE LASER

Mark A. DeWilde, Forest Hill, and Leon J. Decker, Aberdeen, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 18, 1983, Ser. No. 486,160

Int. Cl.⁴ H01S *3/04*

U.S. Cl. 372—34 **5 Claims**



1. In a flash lamp pumped, dye laser apparatus comprising a flash lamp and a liquid dye solution in a transparent compartment proximate to the flash lamp, said compartment also connected to a tubular circulatory system for moving said liquid dye, said dye solution activated by flashing of said lamp for lasing to emit light, said lamp and compartment enclosed in a cooling first water jacket, said jacket enclosing deionized water for cooling, an improved cooling system wherein the temperature of said deionized water and said liquid dye solution are maintained within 0.5° C. of one another, enabling said laser for pulsing at a stabilized 10 pulses per second rate, said cooling system further comprising:

first heat exchange reservoir (12) for receiving a bath of laser dye liquid 10 from said tubular circulatory system (24, 26) connected thereto, and a first pump means (14) for pumping said dye liquid from said first reservoir and through said compartment 18 and back to said reservoir in a closed system through said tubular system; first pipe means 28 submerged in said first reservoir for heat exchange purposes, carrying deionized water in a closed loop (42, 50, 34, 38, 41) including said first jacket, and further including a second reservoir (32) having a second pipe means, opened for pouring deionized water thereinto (30) through a water filter means 44 submerged in said second reservoir and siphoning deionized water therefrom, said deionized water pumped through said closed loop by a second pumping means 36 said second closed loop passing through a second water jacket means 40 for cooling said deionized water closed loop enclosed in said second

jacket, said jacket having tap water circulating therethrough.

4,586,186

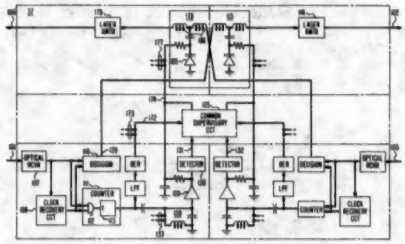
MAINTENANCE RESPONSE SIGNALLING ARRANGEMENT FOR A DIGITAL TRANSMISSION SYSTEM

Cleo D. Anderson, Colts Neck, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 8, 1983, Ser. No. 521,411

Int. Cl.[4] H04B *3/36, 9/00*

U.S. Cl. 375—3 **3 Claims**



1. A maintenance response signalling arrangement for a digital transmission system using a main data stream between a repeater and an end terminal, the arrangement comprising

means at the repeater responsive to a signal received from the end terminal for producing a subcarrier;

means for modulating the subcarrier information from the repeater;

means responsive to the modulated subcarrier for varying delay of the main data stream between the repeater and the end terminal to produce a jitter signal representing the information on the main data stream;

means responsive to the jitter signal for recovering the information, the recovering means include means responsive to the main data stream for recovering a clock signal including the jitter signal representing the information;

means responsive to the recovered clock signal for reproducing the modulated subcarrier;

means responsive to the recovered clock signal for producing quadrature clock signals at the frequency of the subcarrier; and

means responsive to the modulated subcarrier and the quadrature clock signals for recovering the information.

4,586,187

CONTROL APPARATUS FOR CONTROLLING MOVEMENTS OF AN ELECTRODE IN AN ELECTRIC ARC FURNACE

Theo Hein, and Götz Holtfreter, both of Lohr, Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

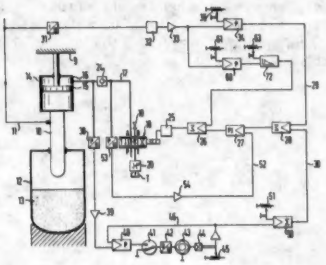
Filed Nov. 16, 1983, Ser. No. 552,456

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1982, 3242934

Int. Cl.[4] H05B *7/156*

U.S. Cl. 373—106 **12 Claims**

1. A control apparatus axially adjusting the vertical position of an electrode of an electric arc furnace, comprising a hydraulic cylinder operatively connected to the electrode to adjust the electrode position, a valve selectively connects the operating chamber of said hydraulic cylinder to either a pressure source or to a reservoir to selectively raise or lower the electrode and an electrical control circuit supplying a current responsive control signal to said valve to operate said valve, said current responsive control signal being produced by comparing the actual value of the electric arc current with a desired value, the improvement comprising means measuring the pressure in the operating chamber of said hydraulic cylinder and generating a pressure signal and feeding said pressure



signal to said control circuit in addition to said current responsive control signal to control said valve in response to both pressure and current.

4,586,188

APPARATUS FOR CONVERTING A THREE-PHASE ARC FURNACE TO D.C. OPERATION

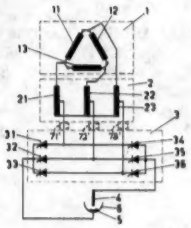
Karl Bühler, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Mar. 1, 1984, Ser. No. 585,243

Claims priority, application Switzerland, Mar. 8, 1983, 1239/83

Int. Cl.[4] H05B *7/144*

U.S. Cl. 373—108 **6 Claims**



1. An apparatus for converting an arc furnace installation from three-phase operation to d.c. operation, the arc furnace installation having a high-voltage transformer, a controllable three-phase furnace transformer, a furnace casing and at least two electrodes, comprising an autotransformer having a transformation ratio of a primary voltage to a secondary voltage in a range from 1.2 to 2.5 for increasing the inductive reactance, and a rectifier circuit connected in between a secondary side of the three-phase transformer and the electrodes.

4,586,189

ASYNCHRONOUS TO SYNCHRONOUS DATA INTERFACE

Raymond E. Tyrrell, Raleigh, N.C., assignor to ITT Corporation, New York, N.Y.

Filed Feb. 16, 1984, Ser. No. 580,905

Int. Cl.[4] H04L *25/38*

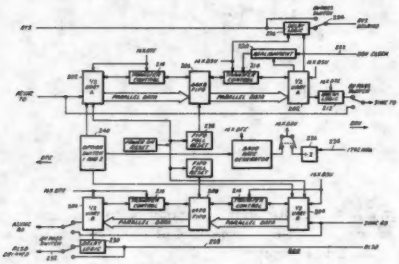
U.S. Cl. 375—117 **6 Claims**

1. A data transmission system comprising:

a source of asynchronous data at a source clock rate for transmission of a serial bit stream of characters including

start/stop bits to a remote destination of asynchronous data;

asynchronous to synchronous data conversion means for alinging the asynchronous data at the source clock rate to a synchronous clock at a different rate for serial synchronous transmission wherein said start/stop bits are extracted and reinserted prior to transmission to said remote asynchronous destination such that no data characters are lost in the data stream including said start/stop bits



wherein said means includes a UART (Universal Asynchronous Receiver/Transmit) for performing a baud rate conversion and a clock alignment; and

synchronous to asynchronous data conversion means for coupling said synchronously clocked data stream asynchronously at a desired transmission rate to said remote destination of asynchronous data;

wherein the asynchronous transmission rate is substantially equal to or lower than the synchronous data transmission rate.

4,586,190

BLOOD CELL DISCRIMINATOR AND COUNTER UTILIZING TRANSMITTED AND SCATTERED LIGHT

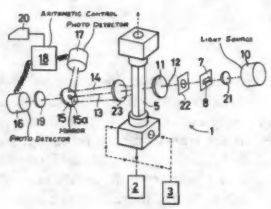
Fumio Tsuji, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Nov. 14, 1983, Ser. No. 551,609

Claims priority, application Japan, Nov. 19, 1982, 57-203980

Int. Cl.[4] G01N *21/47*

U.S. Cl. 377—10 **6 Claims**



1. A blood counter comprising a sheathed flow cell in which each particle of the cells of blood is flowed separately and succesively; a light source for radiating light on said sheathed flow cell, the light including light having the wavelengths for causing absorption of light by hemoglobin in the blood; a portion of said light being transmitted across said sheathed flow cell; a portion of said light being scattered from the sheathed flow cell, means for receiving transmitted light to detect the degree of absorption by hemoglobin from the light transmitted across said sheathed flow cell; means for receiving the scattered light to detect the intensity of the light scattered from the sheathed flow cell; a decision assembly for judging, based on the output signals detected by means for receiving the transmitted light and scattered light, (1) the flowing cells therein to be a red blood cell if the degree of absorption is larger than the preselected level and (11) the other material to be a blood platelet if the intensity of the scattered light is larger than a certain level and if the degree of absorption is smaller than said preselected level; and a counter assembly for counting out the red blood cells and blood platelets.

4,586,191

SOUND SIGNAL PROCESSING APPARATUS

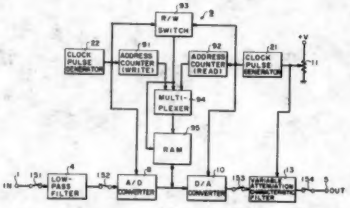
Satoshi Nishimura, Gifu, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Aug. 9, 1982, Ser. No. 406,442

Claims priority, application Japan, Aug. 19, 1981, 56-129824; Aug. 20, 1981, 56-130980; Sep. 18, 1981, 56-148472; Dec. 18, 1981, 56-205955

Int. Cl.[4] G10L *1/00*

U.S. Cl. 381—31 **5 Claims**



1. A sound signal processing apparatus for converting the frequency of a sound signal, comprising:

an input terminal for receiving said sound signal,

first clock pulse generating means for generating a first clock pulse having a fixed frequency,

second clock pulse generating means for generating a second clock pulse having a frequency variable as function of a given external control signal,

first filter means receiving said sound signal applied to said input terminal and having a fixed attenuation characteristic,

frequency converting means responsive to the output of said first clock pulse generating means for sampling the output of said first filter means, for storing said sampled data, responsive to the output of said second clock pulse generating means for reading said sampled data as stored for providing said sound signal of a converted frequency,

second filter means receiving the output of said frequency converting means having an attenuation characteristic changeable as a function of the change of the frequency of said second clock pulse, and

an output terminal coupled to said second filter means for providing an output signal therefrom,

wherein said frequency converting means comprises

a sampling pulse input terminal for receiving as a sampling pulse one of the output of said first clock pulse generating means and the output of said second clock pulse generating means,

a read clock pulse input terminal for receiving as a read clock pulse the other of the output of said first clock pulse generating means and the output of said second clock pulse generating means,

a sound signal input terminal for receiving said sound signal, and

a sampled data output terminal for providing said sampled data,

first switching means for connecting one of the output of said first clock pulse generating means and the output of said second clock pulse generating means to the sampling pulse input terminal of said frequency converting means

and for connecting the other of the output of said first clock pulse generating means and the output of said second clock pulse generating means to the read clock pulse input terminal of said frequency converting means, and

second switching means for connecting one of the output of said first filter means and the output of said second filter means to the sound signal input terminal of said frequency converting means and for connecting the other of the output of said first filter means and the output of said second filter means to the sampled data output terminal of said frequency converting means and for connecting the output of either said filter means connected to said sampled data input terminal to said output terminal, and wherein

said first and second switching means, in a first state, supplying the output of said first clock pulse generating means to the sampling pulse input terminal of said frequency converting means and the output of said second clock pulse generating means to the read clock pulse input terminal of said frequency converting means and supplying the sound signal from said input terminal to the input of said first filter means and the output of said first filter means to the sound signal input terminal of said frequency converting means and supplying the sampled data from said frequency converting means to the input of said second filter means and supplying the output of said second filter means to said output terminal,

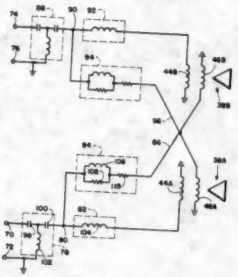
said first and second switching means, in a second state, supplying the output of said second clock pulse generating means to the sampling pulse input terminal of said frequency converting means and the output of said first clock pulse generating means to the read clock pulse input terminal of said frequency converting means, supplying the sound signal from said input terminal to the input of said second filter means, supplying the output of said second filter means to the sound signal input terminal of said frequency converting means, supplying the output of said frequency converting means to the input of said first filter means, and supplying the output of said first filter means to said output terminal.

4,586,192

SOUNDSTAGE BOUNDARY EXPANSION SYSTEM

Lawrence E. Arntson, Aloha, Oreg., assignor to Robert B. Welch, Milwaukie and David O. Johnson, Lake Oswego, both of, Oreg., part interest to each

Filed Jan. 27, 1984, Ser. No. 574,346
Int. Cl.[4] H04R 5/00
U.S. Cl. 381—24 **9 Claims**



1. A soundstage boundary expansion system for providing the effect of a sound source characterized by apparent sound directionality beyond the physical dimensions of the system, said system comprising:

an amplifier with first and second channel outputs respectively representing sound information intended to give the impression of originating from different directions,

first and second sound transducers positionable at spaced locations and responsive to said first and second channel outputs of said amplifier, the first transducer having a physically movable element and first means for causing said physically movable element of said first transducer to vibrate in a first phase sense in response to the first amplifier channel output, and the second transducer having a physically movable element and second means for causing said physically movable element of said second transducer to vibrate in a first phase sense in response to the second amplifier channel output,

said first transducer having means distinct from said first means for separately physically driving said physically movable element of the first transducer in proportion to said second amplifier channel output but in a reversed phase sense,

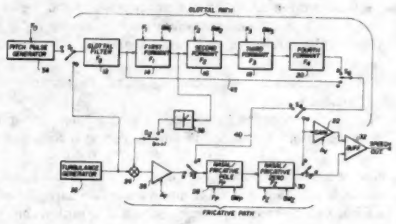
and said second transducer having means distinct from said second means for separately physically driving said physically movable element of the second transducer in proportion to said first amplifier channel output but in a reversed phase sense.

4,586,193

FORMANT-BASED SPEECH SYNTHESIZER

Norman C. Seiler, West Melbourne, Fla., and Stephen S. Walker, Lilburn, Ga., assignors to Harris Corporation, Melbourne, Fla.

Filed Dec. 8, 1982, Ser. No. 447,947
Int. Cl.[4] G10L 1/00
U.S. Cl. 381—51 **22 Claims**



1. A formant-based speech synthesizer comprising:

glottal signal path including, in series, glottal filter means for shaping glottal signal path input signals, at least a first, second and third formant filter means for augmenting individual formant frequencies, and glottal path attenuating means for providing a variably attenuated glottal output signal;

fricative signal path including, in series, modulating means for modulating fricative signal path input signals, fricative path attenuating means for variably attenuating fricative signal path signals and a PZ filter means for augmenting pole and zero frequencies;

pitch means for generating a glottal source signal;

pseudorandom noise means for generating a fricative source signal;

first switch means for selectively connecting said pitch means or said noise means to said glottal signal path as an input signal;

second switch means for selectively disconnecting said PZ filter means from said fricative signal path and connecting said PZ filter means between said formant filter means and said glottal path attenuating means;

third switch means for selectively disconnecting said formant filter means from said glottal signal path and connecting said glottal filter means to said glottal path attenuating means;

rectifier means connected to the output of said first fromant

filter means for half-wave rectifying the filtered first formant signal;

fourth switch means for selectively connecting said rectifier means or a fixed amplitude signal to said modulating means; and

output means for selectively providing an output signal from said glottal signal path, said fricative signal path or from both signal paths in combination.

4,586,194

EARPHONE CHARACTERISTIC MEASURING DEVICE

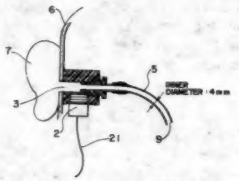
Makoto Kohashi, Kanagawa; Tanetoshi Miura, Kokubunji; Kaoru Okabe, Kunitachi, and Haruo Hamada, Mitaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1984, Ser. No. 576,476

Claims priority, application Japan, Mar. 9, 1983, 58-37335

Int. Cl.[4] H04R *29/00*

U.S. Cl. 381—60 **17 Claims**



1. An earphone characteristic measuring device for simulation-measuring a characteristic of an earphone in a real ear, comprising:

an acoustic coupler including an acoustic tube having an opening to which an earphone under measurement is to be removably mounted and having an acoustic resistance termination;

sound source means for generating sound information to said acoustic coupler;

pickup means coupled to an end of said acoustic coupler to pick up sound pressure information in said acoustic coupler:

memory means for storing an input impedance Z_{inc} of said acoustic coupler viewed from an end of an earmold of said earphone inserted into said acoustic coupler, an input impedance Z_{inr} of the real ear represented by a sum of an eardrum impedance of the real ear and an external auditory canal volume of the real ear, and the sound pressure information in said acoustic coupler supplied from said pickup means;

characteristic calculation means coupled to said memory means for transforming the earphone characteristic of the acoustic coupler to the earphone characteristic of the real ear; and output means coupled to said characteristic calculation means for outputting a calculation result.

4,586,195

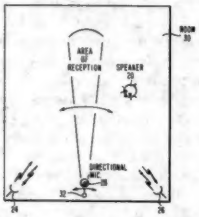
MICROPHONE RANGE FINDER

Martin DeGeorge, Cinnaminson, N.J.; Hartwig Ruell, Fuerstenfeldbruck, Fed. Rep. of Germany, and John Welch, Mount Laurel, N.J., assignors to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Jun. 25, 1984, Ser. No. 624,442

Int. Cl.[4] H04R *3/00*

U.S. Cl. 381—92 **9 Claims**



1. A noise suppressing microphone system, comprising:

(a) microphone means for receiving audio information, said means being responsive thereto to generate electrical audio signals;

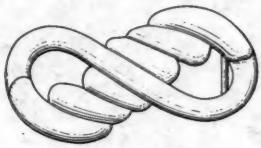
(b) range finding means for determining the position of a speaker relative to said microphone means; and

(c) adjusting means for controlling the level of said electrical audio signals of said microphone means, said adjusting means being responsive to said range finding means to control said microphone means.

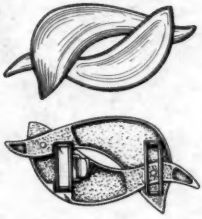
283,556
SPORT SHOE
Robert B. Campbell, New York, N.Y., assignor to BBC International Ltd., New York, N.Y.
Filed Jan. 25, 1984, Ser. No. 573,557
Term of patent 14 years
U.S. Cl. D2—309

283,557
ATHLETIC SOCK
Dewey A. Houston, Conover, N.C., assignor to Twin City Knitting Company, Inc., Conover, N.C.
Filed Jan. 23, 1984, Ser. No. 573,218
Term of patent 14 years
U.S. Cl. D2—331

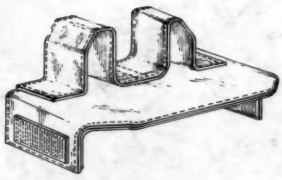
283,558
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Dec. 21, 1984, Ser. No. 684,702
Term of patent 14 years
U.S. Cl. D2—405



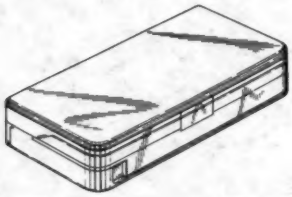
283,559
BELT BUCKLE
Alexis V. Kirk, New York, N.Y., assignor to Somersett Moon Ltd., New York, N.Y.
Filed Dec. 21, 1984, Ser. No. 684,703
Term of patent 14 years
U.S. Cl. D2—427

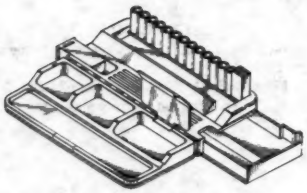


283,560
CAMERA-SUPPORTING PLATFORM INSERT FOR CAMERA BAGS
Stanley Uchin, Marlboro, N.J., assignor to Louis Lefkowitz & Brother, Inc., Milltown, N.J.
Filed Jun. 15, 1983, Ser. No. 504,558
Term of patent 14 years
U.S. Cl. D3—33

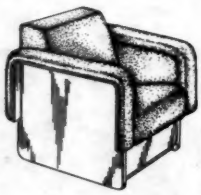


283,561
COMPARTMENTED STORAGE BOX FOR STATIONERY ARTICLES OR THE LIKE
Kurt Geist, Room 805, Belgian Bank Bldg., 721 Nathan Rd., Kowloon, Hong Kong
Filed Sep. 22, 1983, Ser. No. 534,619
Claims priority, application United Kingdom, Mar. 24, 1983, 1 012 143
Term of patent 14 years
U.S. Cl. D3—74



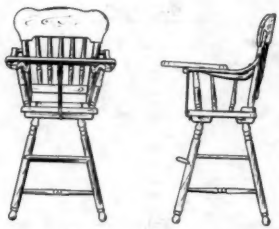


283,562
SEAT
William B. Raftery, Arlington, Tex., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed May 13, 1983, Ser. No. 494,177
Term of patent 14 years
U.S. Cl. D6—334

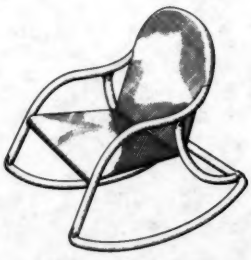


283,563
PUPIL DESK
Alfonso Arroyo, Chula Vista, Calif., assignor to Conectabal, Inc., San Diego, Calif.
Filed May 26, 1983, Ser. No. 498,499
Term of patent 14 years
U.S. Cl. D6—338

283,564
HIGH CHAIR
Roy E. Knoedler, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ind.
Filed Nov. 10, 1983, Ser. No. 550,808
Term of patent 14 years
U.S. Cl. D6—339

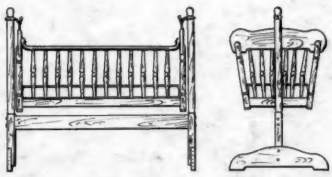


283,565
CHILD'S ROCKING CHAIR
Michael C. Wilson, Glen Ellyn, Ill., assignor to Tyke Corporation, Chicago, Ill.
Filed Jan. 5, 1984, Ser. No. 568,496
Term of patent 14 years
U.S. Cl. D6—348



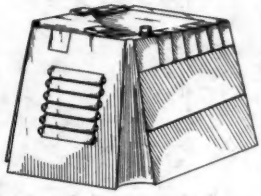
283,566
FOLDABLE CHAIR
Jan Olof H. Cronsioe, Viktorigagatan 15, 411 25 Göteborg, Sweden
Filed Sep. 21, 1983, Ser. No. 534,287
Claims priority, application Sweden, Mar. 21, 1983, 83-0809
Term of patent 14 years
U.S. Cl. D6—368

283,567
CRADLE
Roy E. Knoedler, Columbus, Ind., assignor to Cosco, Inc., Columbus, Ind.
Filed Nov. 10, 1983, Ser. No. 550,807
Term of patent 14 years
U.S. Cl. D6—386



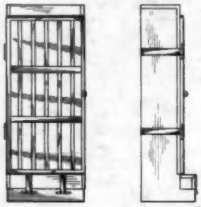
283,568
COLLAPSIBLE BAR
Kerry C. Valley, 1506 E. Hilton Ave., Mesa, Ariz. 85204
Filed Sep. 12, 1983, Ser. No. 531,045
Term of patent 14 years
U.S. Cl. D6—429

283,569
VIDEO GAME JOYSTICK HOLDER
George K. Dean, Rte. 1, Box 214A, Liberty, Ky. 42539
Filed Oct. 3, 1983, Ser. No. 538,094
Term of patent 14 years
U.S. Cl. D6—449

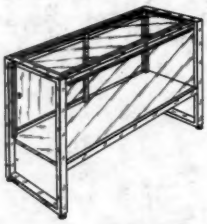


283,570
SHOE RACK
Jacob Penner, 12300 White Rock Rd., Rancho Cordova, Calif. 95670
Filed Mar. 21, 1984, Ser. No. 591,937
Term of patent 14 years
U.S. Cl. D6—464

283,571
GUN CABINET
Odus R. Champion, P.O. Box 406, Glenpool, Okla. 74033
Filed Feb. 16, 1983, Ser. No. 467,151
Term of patent 14 years
U.S. Cl. D6—470

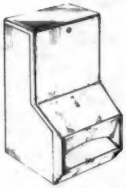


283,572
SHOWCASE
Robert G. Harig, Paragould, Ark., assignor to Darling Store Fixtures, Paragould, Ark.
Filed Apr. 27, 1983, Ser. No. 489,097
Term of patent 14 years
U.S. Cl. D6—470



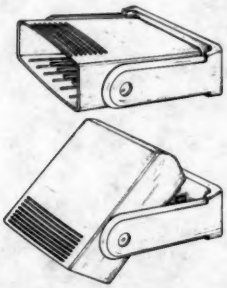
283,573
COMBINED TOWEL DISPENSER, STORAGE COMPARTMENT AND TRASH RECEPTACLE
Francois Bernard, Paris, France, assignor to Beghin-Say S.A., Thumeries, France
Filed Apr. 29, 1983, Ser. No. 490,187
Claims priority, application France, Oct. 29, 1982, 823768
Term of patent 14 years
U.S. Cl. D6—519

283,574
TOWEL DISPENSER
Francois Bernard, Paris, France, assignor to Beghin-Say S.A., Thumeries, France
Filed Apr. 29, 1983, Ser. No. 489,801
Claims priority, application France, Oct. 29, 1982, 82.3768
Term of patent 14 years
U.S. Cl. D6—522



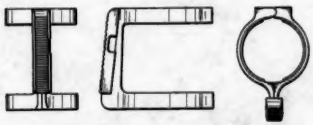
283,575
COMBINED TOWEL DISPENSER AND STORAGE COMPARTMENT
Francois Bernard, Paris, France, assignor to Beghin-Say S.A., Thumeries, France
Filed Apr. 29, 1983, Ser. No. 490,186
Claims priority, application France, Oct. 29, 1982, 82.3768
Term of patent 14 years
U.S. Cl. D6—522

283,576
SOAP HOLDER
Peter S. Lambert, Mortdale, and John Herbert, Paddington, both of Australia, assignors to Inventive Products Pty. Ltd., Sydney, Australia
Filed Jun. 28, 1983, Ser. No. 508,804
Term of patent 14 years
U.S. Cl. D6—540

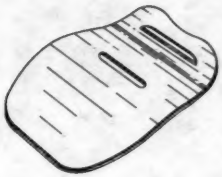


283,577
CIRCULAR MOUNT FOR RIBBED FLOOR MATS
Myron E. Ullman, Jr., Canfield, Ohio, and Brian D. Kessler, Alexandria, Va., assignors to Space-Links, Inc., Youngstown, Ohio
Filed May 2, 1983, Ser. No. 490,538
Term of patent 14 years
U.S. Cl. D6—587

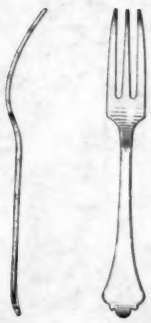
283,578
HOLDER FOR CONTAINERS
Takehiko Kawaguchi, Sakai, Japan, assignor to Taiyo Sanso Kabushiki Kaisha, Osaka, Japan
Filed Jul. 21, 1983, Ser. No. 515,819
Claims priority, application Japan, Apr. 20, 1983, 58-16984
Term of patent 14 years
U.S. Cl. D7—70



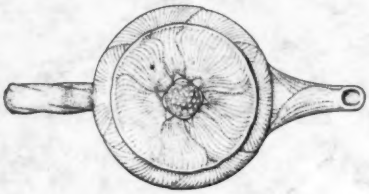
283,579
COMBINED SPATULA, SCRAPER AND PEELER
Dana Peterson, 1722-176 Oro Vista Rd., San Diego, Calif. 92154
Filed Jun. 21, 1983, Ser. No. 506,419
Term of patent 14 years
U.S. Cl. D7—102

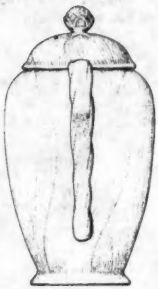


283,580
FORK
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 15, 1982, Ser. No. 418,468
Term of patent 14 years
U.S. Cl. D7—137

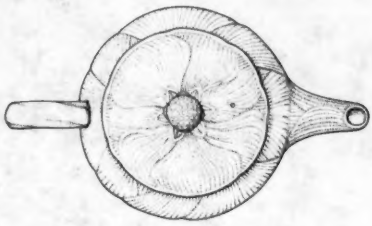


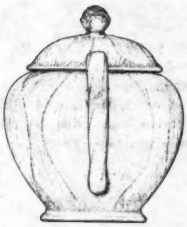
283,581
COFFEEPOT
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,854
Term of patent 14 years
U.S. Cl. D7—302



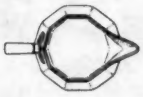


283,582
TEAPOT
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,855
Term of patent 14 years
U.S. Cl. D7—302

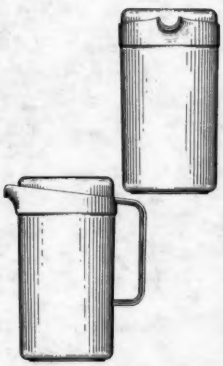




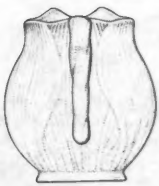
283,583
CREAM PITCHER
Alfred Blake, Hillsdale, N.J., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Sep. 23, 1983, Ser. No. 535,344
Term of patent 14 years
U.S. Cl. D7—303



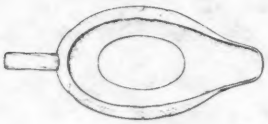
283,584
COVERED PITCHER
Andre Morin, Pointe-Claire, Canada, assignor to Les Industries Provinciales Ltee, St. Damien, Canada
Filed Mar. 29, 1984, Ser. No. 594,786
Term of patent 14 years
U.S. Cl. D7—317

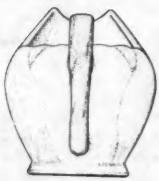


283,585
CREAM PITCHER
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,825
Term of patent 14 years
U.S. Cl. D7—319

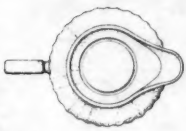


283,586
GRAVY BOAT
Larry R. Laslo, New York, N.Y., assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,860
Term of patent 14 years
U.S. Cl. D7—319

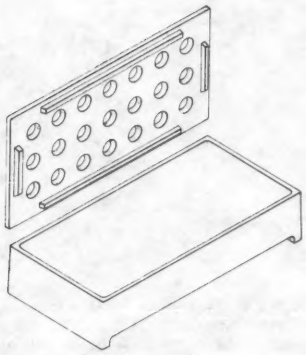




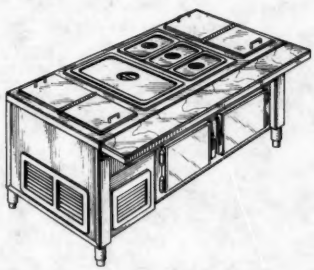
283,587
CREAM PITCHER
Katsuhiro Otake, Mie, Japan, assignor to American Commercial, Incorporated, Secaucus, N.J.
Filed Jul. 27, 1983, Ser. No. 517,784
Term of patent 14 years
U.S. Cl. D7—319



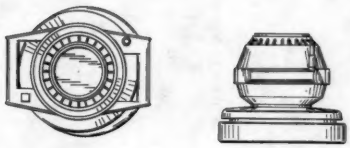
283,588
MEAT SMOKING DEVICE HAVING HOLDER FOR WOOD CHIPS
Charles W. Stuckey, 1293 Pasadena Ave., Atlanta, Ga. 30306
Filed Sep. 4, 1984, Ser. No. 646,817
Term of patent 14 years
U.S. Cl. D7—332



283,589
FOOD PRODUCT ASSEMBLY TABLE
John A. Erlandson, Wichita, Kans., and Edward Engoron, Dallas, Tex., assignors to Pizza Hut, Inc., Wichita, Kans.
Filed Sep. 2, 1983, Ser. No. 529,014
Term of patent 14 years
U.S. Cl. D7—347



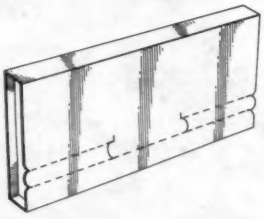
283,590
AUTOMOBILE BUFFER
Howard T. Ibaraki, Hacienda Heights, Calif., assignor to Mr. Gasket Company, Cleveland, Ohio
Filed Aug. 8, 1983, Ser. No. 521,183
Term of patent 14 years
U.S. Cl. D8—62



283,591
LOW PROFILE PANEL FASTENER
Kenneth A. Swanstrom, Buckingham Township, Bucks County, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.
Filed Oct. 14, 1983, Ser. No. 542,042
Term of patent 14 years
U.S. Cl. D8—387

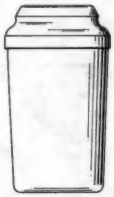
283,592
CONTAINER FOR DISPLAYING AND STORING ARTICLES
Richard Quarrell, and Paul A. Ransom, both of New York, N.Y., assignors to General Mills Products Corp., Minneapolis, Minn.
Filed Dec. 27, 1983, Ser. No. 566,008
Term of patent 14 years
U.S. Cl. D9—337

283,593
PACKAGING CONTAINERS FOR AMPULES OR THE LIKE
Otto Hofer, Im Gafos 8, FL-9494 Schaan, Liechtenstein
Filed Jun. 1, 1983, Ser. No. 499,901
Claims priority, application Switzerland, Dec. 1, 1982, 112723
Term of patent 14 years
U.S. Cl. D9—341

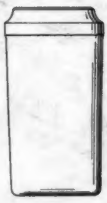


283,594
PACKAGING CONTAINER
Donald N. MacLaughlin, Midland, Mich., and Vincent E. Fortuna, Huntington Beach, Calif., assignors to Cosden Technology, Inc., Dallas, Tex.
Filed Apr. 9, 1984, Ser. No. 597,885
Term of patent 14 years
U.S. Cl. D9—349

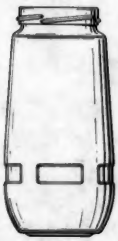
283,595
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Vercon, Inc., Dallas, Tex.
Filed Apr. 30, 1984, Ser. No. 605,445
Term of patent 14 years
U.S. Cl. D9—349



283,596
PACKAGING CONTAINER
Vincent E. Fortuna, Huntington Beach, Calif., and Donald N. MacLaughlin, Midland, Mich., assignors to Vercon, Inc., Dallas, Tex.
Filed Apr. 30, 1984, Ser. No. 605,516
Term of patent 14 years
U.S. Cl. D9—349

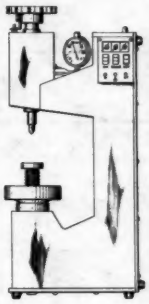


283,597
JAR
Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 31, 1983, Ser. No. 547,306
Term of patent 14 years
U.S. Cl. D9—390

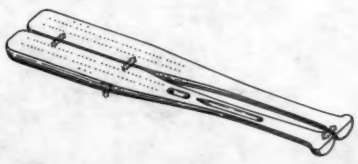


283,598
BOTTLE
Francois M. P. Hériard-Dubreuil, Segonzac, France, assignor to E. Remy Martin & Co., S.A., Cognac, France
Filed Dec. 14, 1982, Ser. No. 449,678
Term of patent 14 years
U.S. Cl. D9—405

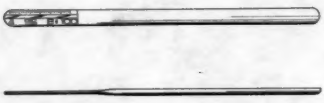
283,599
MATERIAL HARDNESS TESTER OR SIMILAR ARTICLE
Ernest L. Biddle, Jr., Rosemont, and Henry W. Wessells, III, Paoli, both of Pa., assignors to King Tester Corporation, King of Prussia, Pa.
Filed Aug. 29, 1983, Ser. No. 527,104
Term of patent 14 years
U.S. Cl. D10—46



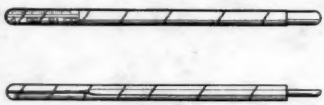
283,600
CRIBBAGE BOARD OR THE LIKE
Robert C. Hammond, 1573 Landell Ct., Los Altos, Calif. 94022
Filed Dec. 23, 1983, Ser. No. 551,598
Term of patent 14 years
U.S. Cl. D10—46.1



283,601
THERMOMETER
David L. Fuller, 1110 Mountain Creek Trail, NW., Atlanta, Ga. 30328; Bryan T. Moss, 1060 Willeo Rd., Roswell, Ga. 30075, and Joe H. Smith, 2903 Harcourt Dr., Decatur, Ga. 30083
Filed Nov. 7, 1983, Ser. No. 548,980
Term of patent 14 years
U.S. Cl. D10—57

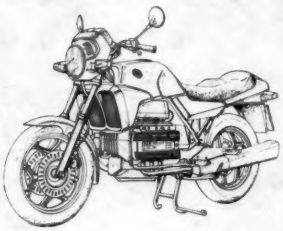


283,602
THERMOMETER ASSEMBLY
David L. Fuller, 1110 Mountain Creek Trail, NW., Atlanta, Ga. 30328; Bryan T. Moss, 1060 Willeo Rd., Roswell, Ga. 30075, and Joe H. Smith, 2903 Harcourt Dr., Decatur, Ga. 30083
Filed Nov. 7, 1983, Ser. No. 548,981
Term of patent 14 years
U.S. Cl. D10—57

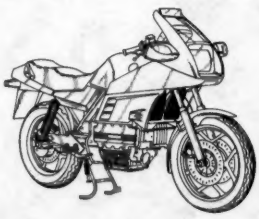


283,603
AUTOMOBILE
Stewart D. Reed, 25052 Woodridge, Lake Forest, Calif. 92630, and Toru Hayamoto, 5-38-7, Miya-machi, Toyota-shi, Aichi-ken, Japan
Filed Oct. 12, 1983, Ser. No. 541,505
Term of patent 14 years
U.S. Cl. D12—90

283,604
MOTORCYCLE
Klaus V. Gevert, Munich; Karl H. Abe, Steinebach/Wörthsee; Hubert Walter, Penzberg; Hans-Joachim Saaksmeier, Munich, and Eftimula Vanco, Neufahrn, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke A.G., Fed. Rep. of Germany
Filed Mar. 24, 1983, Ser. No. 478,508
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, MR 13095
Term of patent 14 years
U.S. Cl. D12—110

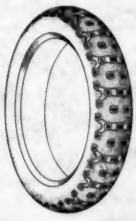


283,605
MOTORCYCLE
Karl H. Abe, Steinebach/Wörthsee, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke A.G., Fed. Rep. of Germany
Filed Oct. 21, 1983, Ser. No. 544,289
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1983, MR 13423
Term of patent 14 years
U.S. Cl. D12—110



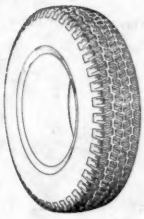
283,606
BICYCLE
Alexander E. Moulton, Bradford-on-Avon, England, assignor to Alex Moulton Limited, Wiltshire, England
Filed May 23, 1983, Ser. No. 497,119
Claims priority, application United Kingdom, Dec. 1, 1982, 1 010 043; Dec. 1, 1982, 1 010 046
Term of patent 14 years
U.S. Cl. D12—111

283,607
MOTORCYCLE TIRE
Toshio Hayakawa, and Junichi Kawajiri, both of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 14, 1983, Ser. No. 561,437
Term of patent 14 years
U.S. Cl. D12—140

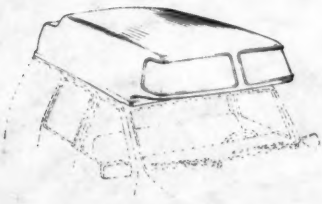


283,608
AUTOMOBILE TIRE
Hideaki Nishio, Saitama, and Tetsuro Kobayashi, Tokyo, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan
Filed Dec. 14, 1983, Ser. No. 561,257
Claims priority, application Japan, Jul. 25, 1983, 58-32270
Term of patent 14 years
U.S. Cl. D12—146

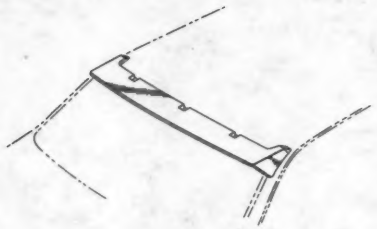
283,609
AUTOMOBILE TIRE
Misao Kawabata, Saitama, and Koujiro Yamaguchi, Tokyo, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 15, 1983, Ser. No. 561,707
Claims priority, application Japan, Jul. 25, 1983, 58-32272
Term of patent 14 years
U.S. Cl. D12—147



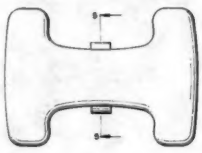
283,610
VAN TOP
Kermit W. Fisher, Elkhart, Ind., assignor to International Vehicles Corp., Bristol, Ind.
Filed Sep. 24, 1984, Ser. No. 653,574
Term of patent 14 years
U.S. Cl. D12—156

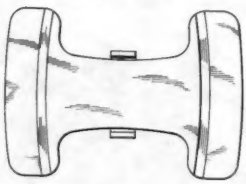


283,611
EXTERIOR VISOR FOR VEHICLES
Richard J. Kingsley, North Bonneville, Wash., assignor to Michael C. Kingsley, Tacoma, Wash.
Filed Nov. 21, 1983, Ser. No. 553,569
Term of patent 14 years
U.S. Cl. D12—191

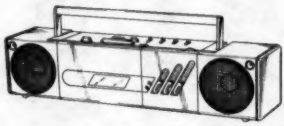


283,612
ANODE FOR CATHODIC PROTECTION OF CHAIN LINKS
David A. Timmington, Shatterford Grange, Shatterford, Arley, Worcester, England
Filed Mar. 18, 1983, Ser. No. 476,794
Claims priority, application United Kingdom, Mar. 2, 1983, 1011753
Term of patent 14 years
U.S. Cl. D13—99

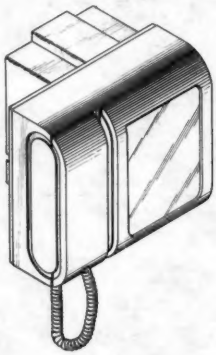


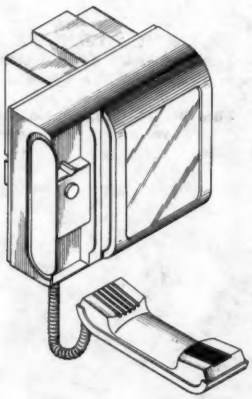


283,613
COMBINED RADIO RECEIVER AND TAPE RECORDER
Manao Nakamura, Nara; Katsutoshi Kido, Kyoto, and Kikuo Ohta, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 3, 1984, Ser. No. 567,903
Claims priority, application Japan, Jul. 6, 1983, 58-29318
Term of patent 14 years
U.S. Cl. D14—5



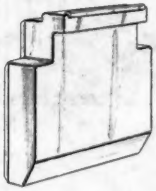
283,614
VIDEO INTERCOMMUNICATION SET INCLUDING HOUSING, TELEPHONE HEADSET AND IMAGE SCREEN
Luigi Somaschini, Lissone, Italy, assignor to CTA Italia S.R.L., Italy
Filed Jun. 21, 1983, Ser. No. 506,377
Term of patent 14 years
U.S. Cl. D14—54



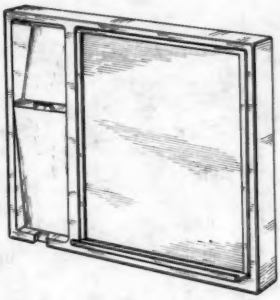


283,615
COMBINATION TELEPHONE INTEGRAL NOTE PAD, AND WRITING INSTRUMENT
Trudy L. Dupree, Washington, D.C., assignor to Excel Technology Corporation, Clearwater, Fla.
Filed Oct. 6, 1983, Ser. No. 539,388
Term of patent 14 years
U.S. Cl. D14—59

283,616
TELEPHONE SET BASE
Michael Brown, Nepean; Clifford D. Read, Almonte, and Warren K. Ellis, Constance Bay, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Feb. 15, 1983, Ser. No. 466,415
Term of patent 14 years
U.S. Cl. D14—60



283,617
TELEPHONE STAND
George M. Janda, Wheaton, and John E. Kaczkos, Elk Grove Village, both of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.
Filed Sep. 16, 1983, Ser. No. 532,946
Term of patent 14 years
U.S. Cl. D14—60



283,618

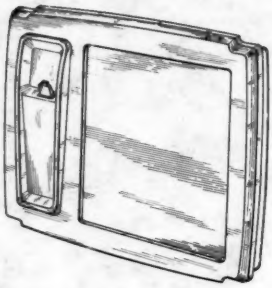
BASE FOR A TELEPHONE SET

George M. Janda, Wheaton, and John E. Kaczkos, Elk Grove Village, both of Ill., assignors to GTE Automatic Electric Inc., Northlake, Ill.

Filed Sep. 16, 1983, Ser. No. 532,947

Term of patent 14 years

U.S. Cl. D14—60



283,619

TELEPHONE INSTRUMENT BASE

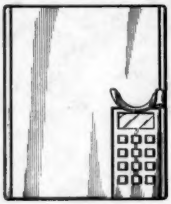
Clive W. Garrard, Foxton, England, assignor to British Telecommunications, London, England

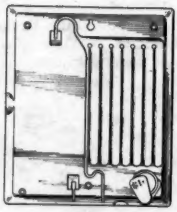
Filed Nov. 30, 1983, Ser. No. 556,554

Claims priority, application United Kingdom, Jun. 22, 1983, 1013707

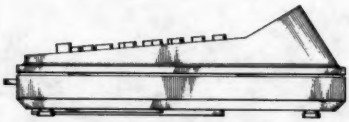
Term of patent 14 years

U.S. Cl. D14—61

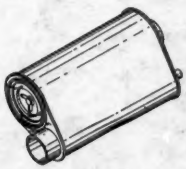




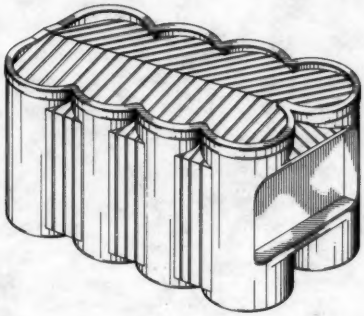
283,620
TELEPHONE BASE
Hector V. Aguilar, Los Angeles, and David R. Crouch, Orange, both of Calif., assignors to American Telecommunications Corporation, El Monte, Calif.
Filed Aug. 29, 1983, Ser. No. 527,348
Term of patent 14 years
U.S. Cl. D14—62



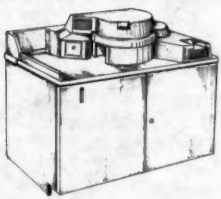
283,621
AIR CLEANER
Daniel S. Gauer, Apple Valley; Steven M. Alseth, Bloomington, and Bruce M. Sullivan, Burnsville, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Sep. 30, 1982, Ser. No. 431,168
Term of patent 14 years
U.S. Cl. D15—5



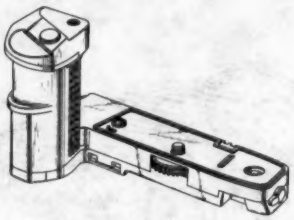
283,622
HOUSING FOR AUTOMATIC METAL CAN RECYCLING APPARATUS
Kennith D. Crosby, Carefree, and William J. Tuten, Scottsdale, both of Ariz., assignors to Creative Technology, Inc., Scottsdale, Ariz.
Filed Apr. 15, 1983, Ser. No. 485,412
Term of patent 14 years
U.S. Cl. D15—123



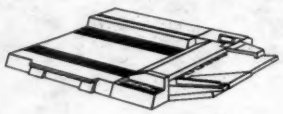
283,623
CONTAINER RECYCLING MACHINE
Robert L. Labarge, Ben Avon; Frederick F. Flugger, Pittsburgh, and Charles J. Leftault, Jr., Murrysville, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
Filed Dec. 12, 1983, Ser. No. 560,709
Term of patent 14 years
U.S. Cl. D15—123



283,624
MOTOR DRIVE FOR CAMERAS
Yoshihisa Maitani, and Yasuo Hattori, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Jul. 22, 1983, Ser. No. 516,318
Claims priority, application Japan, Feb. 25, 1983, 58-7587
Term of patent 14 years
U.S. Cl. D16—10

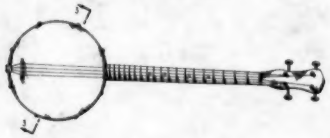


283,625
DOCUMENT FEEDER FOR COPYING MACHINE
Tetsuya Goto, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Dec. 22, 1983, Ser. No. 564,333
Claims priority, application Japan, Jun. 24, 1983, 58-027348
Term of patent 14 years
U.S. Cl. D16—32

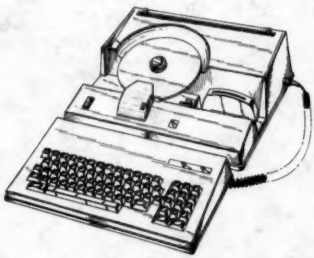


283,626
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Aug. 23, 1984, Ser. No. 643,817
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1984, 13 776
Term of patent 14 years
U.S. Cl. D16—102

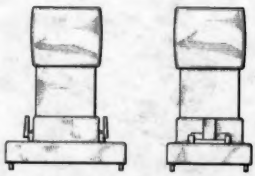
283,627
BANJO
Fred W. Gretsch, P.O. Box 372; Roy D. Cook, P.O. Box 539, both of Ridgeland, S.C. 29936, and Bobby C. Iler, Rte. #2, Box 178AA, Brooklet, Ga. 30415
Filed Dec. 30, 1982, Ser. No. 454,844
Term of patent 14 years
U.S. Cl. D17—19



283,628
PRINTING MACHINE
Fumio Hagiwara, Sakai, Japan, assignor to Varitronic Systems, Inc., Eden Prairie, Minn.
Filed Jan. 31, 1984, Ser. No. 575,328
Term of patent 14 years
U.S. Cl. D18—13



283,629
ADJUSTABLE DATER
Stephen K. Hewitt, 493 Montana Cir., Ojai, Calif. 93023; Per-Arne Carlsson, Nordangsgatan 38, S-502 43 Boras, and Bengt Darhult, Hostena Gard, S-310 58 Vessigebro, both of Sweden
Filed Jan. 30, 1984, Ser. No. 575,181
Term of patent 14 years
U.S. Cl. D18—15



283,630

COMBINED TAPE DISPENSER, DESK TIDY AND CLOCK

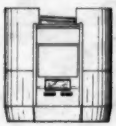
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Hong Kong, Hong Kong

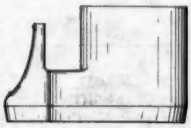
Filed Oct. 5, 1983, Ser. No. 538,826

Claims priority, application United Kingdom, Apr. 6, 1983, 1 012 344

Term of patent 14 years

U.S. Cl. D19—69





283,631

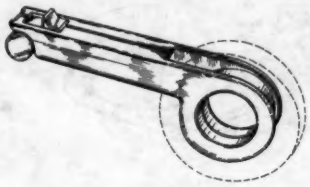
TAPE APPLICATOR OR SIMILAR ARTICLE

David C. Miller; Robert E. Dawson, both of Ridgefield; Thomas J. Pendelton, North Wilton, and Jacob A. Krapowicz, Ridgefield, all of Conn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Aug. 15, 1983, Ser. No. 522,969

Term of patent 14 years

U.S. Cl. D19—69



283,632

GAME DIE

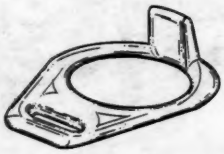
John R. Moore, 1519 Ohio Ave. NE., Canton, Ohio 44705

Filed May 18, 1983, Ser. No. 495,701

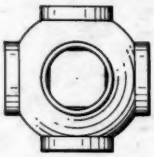
Term of patent 14 years

U.S. Cl. D21—41

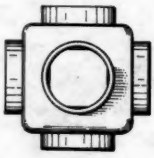
283,633
BATON HOLDER
Richard D. E. Nichols, Fallbrook, Calif., assignor to Bianchi International, Temecula, Calif.
Filed Oct. 7, 1983, Ser. No. 539,832
Term of patent 14 years
U.S. Cl. D21—100



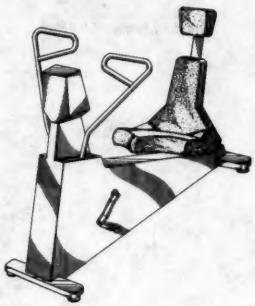
283,634
TOY CONSTRUCTION PIECE
Yuji Kato, Tokyo, Japan, and Michael W. Nuttall, South Pasadena, Calif., assignors to Tomy Kogyo, Inc., Tokyo, Japan
Filed May 9, 1983, Ser. No. 492,623
Term of patent 14 years
U.S. Cl. D21—108



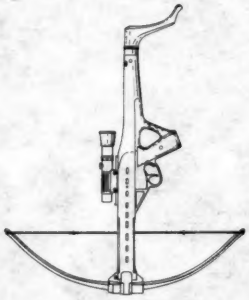
283,635
TOY CONSTRUCTION PIECE
Yuji Kato, Tokyo, Japan, and Michael W. Nuttall, So. Pasadena, Calif., assignors to Tomy Kogyo Company, Inc., Tokyo, Japan
Filed May 9, 1983, Ser. No. 492,624
Term of patent 14 years
U.S. Cl. D21—108



283,636
COMBINED ROWING AND BICYCLE EXERCISER
Chelsea Lepley, 1013 Dearborn, Helena, Mont. 59601
Filed Oct. 22, 1984, Ser. No. 663,370
Term of patent 14 years
U.S. Cl. D21—194

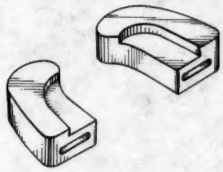


283,637
CROSSBOW
Ivan P. Williams, Huntingdon, Nr. Crannock, England, assignor to Oakland Design Products Limited, Leamington Spa, England
Filed Nov. 7, 1983, Ser. No. 549,296
Term of patent 14 years
U.S. Cl. D22—5

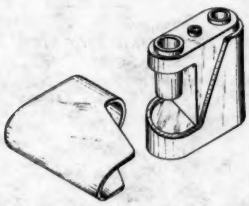


283,638
LIQUID AIR FRESHENER
Xavier de Bascher, Paris, France, assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed May 31, 1983, Ser. No. 499,723
Claims priority, application Spain, Dec. 10, 1982, 103053
Term of patent 14 years
U.S. Cl. D23—150

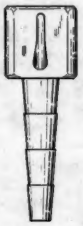
283,639
SET OF MOLDED QUADRANT BASE DENTAL CASTS WITH PEDESTAL
Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.
Filed Apr. 25, 1983, Ser. No. 488,422
Term of patent 14 years
U.S. Cl. D24—16



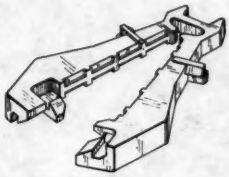
283,640
PREGNANCY TEST KIT
Gary E. Grimes, Watertown, Conn., assignor to Healthcheck Corporation, Cheshire, Conn.
Filed Nov. 9, 1983, Ser. No. 550,155
Term of patent 14 years
U.S. Cl. D24—17



283,641
MEDICAL SUCTION CONTROL INSTRUMENT
Robert F. Spetzler, Shaker Heights, Ohio, and Alfred A. Iversen, Minnetonka, Minn., assignors to PMT Inc., Hopkins, Minn.
Filed Dec. 13, 1982, Ser. No. 449,163
Term of patent 14 years
U.S. Cl. D24—26

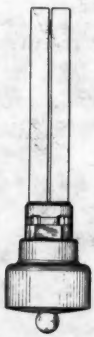


283,642
SURGICAL CLIP
Roy D. Gravener; David T. Green, both of Norwalk; Herbert W. Korthoff, Wilton, and Richard A. McGarry, Norwalk, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Mar. 30, 1983, Ser. No. 480,433
Term of patent 14 years
U.S. Cl. D24—27



283,643
BRIDGE
M. Myron Lepkaluk, New York, N.Y., assignor to Frankland & Lienhard, New York, N.Y.
Filed Apr. 8, 1983, Ser. No. 483,167
Term of patent 14 years
U.S. Cl. D25—1

283,644
COMBINED FLORESCENT LAMP AND ADAPTER BASE THEREFOR
Alva N. Stewart, Jr., Newport, Ark., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 13, 1983, Ser. No. 513,483
Term of patent 14 years
U.S. Cl. D26—3



283,645
MAP READING LIGHT FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Mfg. Co. Ltd., Tokyo, Japan
Filed Nov. 8, 1983, Ser. No. 550,007
Claims priority, application Japan, May 10, 1983, 58-19483
Term of patent 14 years
U.S. Cl. D26—43

283,646
WATERPROOF FLASHLIGHT
Alain Battarel, and Jean-Marc Picard, both of Caudebec les Elbeuf, France, assignors to Gipelec, S.A., Levallois-Perret, France
Filed Oct. 25, 1983, Ser. No. 545,342
Claims priority, application France, Apr. 29, 1983, 83 1601
Term of patent 14 years
U.S. Cl. D26—49

283,647
LIGHTING FIXTURE FOR DECK UMBRELLA
Richard A. Schumann, 1602 Buena Vista Dr., Huntington, W. Va. 25704
Filed Mar. 25, 1983, Ser. No. 478,676
Term of patent 14 years
U.S. Cl. D26—67

283,648
COVER FOR VEHICLE OFF-ROAD LIGHT
Barry J. Magee, 4029 W. Las Palmaritas, Phoenix, Ariz. 85021, and Kathleen M. Veach, 9425 N. 14th St., Phoenix, Ariz. 85020
Filed Jul. 28, 1983, Ser. No. 518,052
Term of patent 14 years
U.S. Cl. D26—139

283,649
SWIMMING POOL CHEMICAL TABLET
John M. Casberg, Cheshire, Conn., assignor to Olin Corporation, Cheshire, Conn.
Filed Dec. 13, 1984, Ser. No. 681,411
Term of patent 14 years
U.S. Cl. D28—2

283,650
COMBINED TOUCH UP HAIR PICK WITH SPRAY DISPENSER
Elbert R. Smith, 311 Spenseth Dr., Montgomery, Ala. 36109
Filed May 29, 1984, Ser. No. 614,964
Term of patent 14 years
U.S. Cl. D28—25

283,651
COMBINED TOUCH UP HAIR COMB WITH SPRAY DISPENSER
Elbert R. Smith, 311 Spenseth Dr., Montgomery, Ala. 36109
Filed May 29, 1984, Ser. No. 614,965
Term of patent 14 years
U.S. Cl. D28—25

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF APRIL, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Walsh, David A.; and Welstead, William J., Jr., 4,585,785, Cl. 514-425.000.

A/S Ferrosan: *See*—
Lassen, Jorgen B.; Christensen, Jorgen A.; Petersen, Erling N.; and Hansen, John B., 4,585,777, Cl. 514-317.000.

AB ASEA-ATOM: *See*—
Helmersson, Sture, 4,585,614, Cl. 376-434.000.

AB Bahco Ventilation: *See*—
Jarmyr, Ragnar; and Unnerholm, Leif, 4,584,929, Cl. 98-115.100.

Abbott, David R.: *See*—
Nourse, John G.; Bourneuf, John J.; and Abbott, David R., 4,585,395, Cl. 416-223.00A.

Abbott Laboratories: *See*—
Wang, Chao-Huei J.; Stroupe, Stephen D.; and Jolley, Michael E., 4,585,862, Cl. 544-319.000.

Abe, Saburo: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Abe, Takao: *See*—
Nakamura, Masaki; Kitamura, Shigehiro; Abe, Takao; and Komamura, Tawara, 4,585,688, Cl. 428-200.000.

Abens, Sandors G.; Keil, William; and Farooque, Mohammad, to Energy Research Corporation. Fuel cell system with premixing of water miscible hydrocarbon fuel and water. 4,585,708, Cl. 429-17.000.

Abib, Roberto A.: *See*—
Kent, Van A.; Abib, Roberto A.; and Kirby, Larry H., 4,585,630, Cl. 423-234.000.

Abildtrup, Jorgen: *See*—
Andresen, Erik E.; and Abildtrup, Jorgen, 4,585,208, Cl. 251-96.000.

Abo, Keiju; Kumura, Haruyoshi; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Yamamuro, Sigeaki, to Nissan Motor Co., Ltd. Hydraulic control system for continuously variable V-belt transmission. 4,584,909, Cl. 74-868.000.

AbuJudom, David N., II, to Johnson Service Company. Apparatus for providing relatively dry, oil free compressed instrument air. 4,584,838, Cl. 62-5.000.

Achtenberg, Theo: *See*—
Saykowski, Franz; Wurminghausen, Thomas; Stattlegger, Hans; and Achtenberg, Theo, 4,585,849, Cl. 528-17.000.

Ackerman, Daniel W., to Universal Instruments Corporation. Circuit board eyelet-type wire gripper. 4,585,295, Cl. 339-258.00R.

Acres, Ronald C.: *See*—
Pirtle, George M.; and Acres, Ronald C., 4,585,390, Cl. 415-160.000.

Acton, Edward M.: *See*—
Mosher, Carol W.; Tong, George L.; and Acton, Edward M., 4,585,859, Cl. 536-6.400.

Acuff, Mark, to Tektronix, Inc. Waveform memory circuit. 4,586,022, Cl. 340-347.0AD.

Adamowski, Andrzej: *See*—
Monne, Maxime; and Adamowski, Andrzej, 4,585,203, Cl. 248-652.000.

Adams, Donald L. Safety hard seat. 4,585,210, Cl. 251-214.000.

Adams, Dudley D.: *See*—
Adams, Jack E.; Adams, Dudley D.; and Coburn, Heath M., 4,584,950, Cl. 211-41.000.

Adams, Frederic R.; Kwasiborski, Stanley, Jr.; and Rimbey, Ronald P., to General Motors Corporation. Vehicle closure latch. 4,585,261, Cl. 292-216.000.

Adams, Jack E.; Adams, Dudley D.; and Coburn, Heath M., to ADCO Products. Display rack. 4,584,950, Cl. 211-41.000.

Adams, Samuel G., to Bristol-Myers Company. Label assembly with verifying means and method of making and using. 4,585,254, Cl. 283-81.000.

ADCO Products: *See*—
Adams, Jack E.; Adams, Dudley D.; and Coburn, Heath M., 4,584,950, Cl. 211-41.000.

ADIR, S.A.R.L.: *See*—
Freyria, Jean; and Lantz, Brigitte, 4,585,794, Cl. 514-434.000.

Adlhoch, Richard H.; and Ward, James, to Motorola, Inc. Dual port memory sense amplifier isolation. 4,586,168, Cl. 365-189.000.

Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., to AMP Incorporated. Assembly for connecting electrical connectors to flat multiconductor cable. 4,584,757, Cl. 29-564.600.

Advanced Computer Concepts, Inc.: *See*—
Thomason, Robert L.; and Tipton, Joseph C., 4,586,036, Cl. 340-720.000.

Advanced Energy Concepts '81, Limited: *See*—
Distin, Robert G., Jr.; and Shaffer, James E., 4,584,904, Cl. 74-804.000.

AE/CDS, Autoclave, Inc.: *See*—
Bowe, Woodford A.; Largione, Robert; and Levy, Eugene J., 4,585,622, Cl. 422-50.000.

Aerovox Incorporated: *See*—
MacDougall, Frederick W., 4,586,112, Cl. 361-330.000.

Aeschlimann, Peter: *See*—
Schwander, Hansrudolf; Markert, Jurgen; and Aeschlimann, Peter, 4,585,460, Cl. 8-549.000.

Agence Spatiale Europeenne: *See*—
Saitto, Antonio; and Mica, Giovanni, 4,586,051, Cl. 343-703.000.

Agency of Industrial Science and Technology: *See*—
Ogasawara, Makoto; and Funahashi, Kazutoshi, 4,585,695, Cl. 428-364.000.

Agfa-Gevaert AG: *See*—
Nitsch, Wilhelm; Kieslich, Walter; and Treiber, Helmut, 4,585,338, Cl. 355-56.000.

Agfa Gevaert Aktiengesellschaft: *See*—
Helling, Gunter; and Peters, Manfred, 4,585,724, Cl. 430-213.000.
Zlokarnik, Marko; Schindler, Georg; Koepke, Gunther; and Stracke, Werner, 4,585,561, Cl. 210-705.000.

Agoston, Andras: *See*—
Andersson, Bjorn; Engding, Alf; Schaub, Peter; and Agoston, Andras, 4,585,610, Cl. 376-249.000.

Agrozet, koncernova obchodna organizacia: *See*—
Mackrle, Vladimir; and Mackrle, Svatopluk, 4,585,556, Cl. 210-221.200.

AHI Operations Limited: *See*—
Millar, Thomas D., 4,585,451, Cl. 604-892.000.

Ahlin, Frank J.: *See*—
Budziak, Frank W.; Burton, James O.; and Ahlin, Frank J., 4,586,150, Cl. 364-562.000.

Aho, Robert E. Heated handle structure. 4,584,787, Cl. 43-23.000.

Aignesberger, Alois: *See*—
Plank, Johann; and Aignesberger, Alois, 4,585,853, Cl. 528-227.000.

Aikens, Paul W., to Du Pont de Nemours, E. I., and Company. Rectilinearally latchable zero insertion force connector. 4,585,288, Cl. 339-75.0MP.

Aimor Denshi Kabushiki Kaisha: *See*—
Matsushima, Keiichi, 4,586,055, Cl. 346-76.0PH.

Aimoto, Shingo: *See*—
Yonahara, Kunio; Miyagawa, Hiroshi; and Aimoto, Shingo, 4,585,578, Cl. 252-511.000.

Aine, Harry E.; and Block, Barry, to Aine, Harry E.; and Block, Barry. Miniature valve and method of making same. 4,585,209, Cl. 251-129.020.

Aine, Harry E.: *See*—
Cadwell, Robert M., 4,584,885, Cl. 73-862.610.

Aisaka, Tatsuyoshi: *See*—
Kamohara, Hisato; Aisaka, Tatsuyoshi; and Kawai, Mituo, 4,585,620, Cl. 420-442.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, 4,585,028, Cl. 137-625.480.

Aisin-Warner K.K.: *See*—
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,585,103, Cl. 192-4.00A.

Akabane, Hitoshi, to Toyoda Koki Kabushiki Kaisha. Numerical control grinding machine for grinding a taper portion of a workpiece. 4,584,795, Cl. 51-165.710.

Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, to Matsushita Electric Works, Ltd. Interruption handling system in time division multiplex remote control system. 4,586,040, Cl. 340-825.080.

Akira, Okada: *See*—
Katayama, Masanori; Yoshio, Miyauchi; and Akira, Okada, 4,585,335, Cl. 355-29.000.

Akridge, James R., to Union Carbide Corporation. Quaternary vitreous solid lithium cation conductive electrolyte. 4,585,714, Cl. 429-193.000.

Aktiengesellschaft Adolph Saurer: *See*—
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,584,951, Cl. 112-97.000.

Albrecht, Charles J., to Dresser Industries, Inc. Sludge collector flight, wear shoe and guide lug assembly. 4,585,116, Cl. 198-729.000.

Alcantara, Miguel A.: *See*—
Lazcano-Navarro, Arturo; Villasenor-Mejia, Antonio; Alcantara, Miguel A.; and Fernandez-Garcia, Jorge, 4,585,476, Cl. 75-59.170.

Alexandrov, Vladimir M.; Rabinov, Anatoly I.; Shalyapin, Mikhail I.; and Jutkevich, Valery I. Rotary impact tool. 4,585,078, Cl. 173-93.500.

Alig, Leo; and Muller, Marcel, to Hoffmann-La Roche Inc. Novel phenethanolamines. 4,585,796, Cl. 514-620.000.

Allelix Inc.: *See*—
Chandler, Howard M., 4,585,623, Cl. 422-57.000.

Allen, Kenneth R., to Essex Engineering Works (Wanstead) Ltd. Coin slide mechanisms. 4,585,111, Cl. 194-257.000.

Allied Colloids Limited: *See*—
Field, John R., 4,585,812, Cl. 523-221.000.
Flesher, Peter; Farrar, David; and Johnson, Ian M., 4,585,843, Cl. 526-63.000.

Allied Corporation: *See*—
Haylock, John C.; Saunders, Peter R.; Turner, Garland L.; and Twilley, Ian C., 4,585,464, Cl. 51-298.000.

Allied, Inc.: *See*—
Aprill, Theophil, Jr., 4,584,876, Cl. 73-168.000.

Allied Paper Incorporated: *See*—
Webster, William R., 4,585,497, Cl. 156-69.000.

Allis-Chalmers Corporation: *See*—
Downing, Terry R., 4,585,268, Cl. 296-102.000.

Allison, Darris E. Planing boat hull. 4,584,959, Cl. 114-288.000.

Almada, Edward M. Packing-resistant valve. 4,585,023, Cl. 137-240.000.

Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, to Farmitalia Carlo Erba S.p.A. Process for preparing penem derivatives. 4,585,874, Cl. 546-272.000.

Alsip, Bruce F. Multi-dimensional game. 4,585,234, Cl. 273-271.000.

Alsthom-Atlantique: *See*—
Manesse, Jean-Pierre; and Angibaud, Jacques, 4,585,369, Cl. 403-322.000.

Altavela, Robert P.; Bailey, Raymond E.; Ewing, Joan R.; and Wallin, Edwin M., to Xerox Corporation. Corona generating device. 4,585,320, Cl. 355-3.0CH.

Aluminum Company of America: *See*—
Booz, A. David; Buchovecky, Kalman E.; Cebulak, Walter S.; Kuchera, Ray A.; and White, David D., Jr., 4,585,601, Cl. 264-12.000.
Otto, William L., Jr.; and Kuhn, Howard A., 4,584,862, Cl. 72-226.000.
Sucech, Steven W., 4,585,645, Cl. 423-625.000.
Tsai, Mei-Yuan, 4,585,565, Cl. 252-49.500.

Amano, Junkichi: *See*—
Ohmi, Masatoshi; and Amano, Junkichi, 4,584,975, Cl. 123-90.380.

Amano, Shin-ya; and Hirakawa, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for analyzing the syntactic structure of a sentence. 4,586,160, Cl. 364-900.000.

Amemori, Hiroyuki: *See*—
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.

Ament, Gary S. Archery bow stabilizer and embedded arrowhead remover. 4,584,983, Cl. 124-89.000.

American Cyanamid Company: *See*—
Avotins, Peter V.; and Spitzer, Donald P., 4,585,550, Cl. 209-166.000.
Fischer, Robert G., Jr.; and Van Savage, Cynthia A., 4,585,628, Cl. 423-22.000.
Lee, Ving J., 4,585,760, Cl. 514-34.000.
Remley, Kenneth H., 4,585,827, Cl. 524-598.000.

American Envelope Company: *See*—
Lillibridge, Harold R., 4,585,221, Cl. 271-10.000.

American Hoechst Corporation: *See*—
Helsley, Grover C.; McFadden, Arthur R.; and Hoffman, David, 4,585,788, Cl. 514-450.000.
Posey, Robert G.; and Culbertson, Edwin C., 4,585,687, Cl. 428-195.000.

American Home Products Corporation: *See*—
Demerson, Christopher A.; and Humber, Leslie G., 4,585,877, Cl. 548-432.000.
Winkley, Michael W.; and McCaully, Ronald J., 4,585,879, Cl. 548-491.000.

American Meter Company: *See*—
Jacobsen, Robert S.; and Schneider, George W., Jr., 4,584,868, Cl. 73-23.000.

American National Red Cross: *See*—
Meryman, Harold T.; Hornblower, Marne; and Syring, Ralph, 4,585,735, Cl. 435-2.000.

American Standard Inc.: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,585,562, Cl. 210-805.000.

Ameyama, Minoru: *See*—
Yamazaki, Hiroshi; Isayama, Takuro; Ameyama, Minoru; Matsumoto, Shuzo; and Katano, Yasuo, 4,586,058, Cl. 346-140.00R.

Amici, Francis R.; Berger, Hans S.; and McNett, John P., to Coleco Industries, Inc. Glove puppet assembly with finger actuated claws. 4,585,425, Cl. 446-327.000.

AMP Incorporated: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,584,757, Cl. 29-564.600.
Frantz, Robert H.; Waters, Mark H.; and Reynolds, Charles E., 4,585,292, Cl. 339-143.00R.
Wolowicz, James P.; and Shaffer, Howard R., 4,585,294, Cl. 339-252.00R.

Amphlett, Godfrey W.: *See*—
Landaburu, Ricardo H.; Amphlett, Godfrey W.; Branson, Roy E.; and Shaw, Arthur B., 4,585,654, Cl. 424-101.000.

AMSTED Industries Incorporated: *See*—
Cope, Geoffrey W., 4,585,133, Cl. 213-206.000.
Jeffreys, Lyman W., 4,585,048, Cl. 164-323.000.

Amstore Corporation: *See*—
Crossman, Philip E.; Amstutz, Douglas D.; and Kelemen, Donald D., 4,585,131, Cl. 211-206.000.

Amstutz, Douglas D.: *See*—
Crossman, Philip E.; Amstutz, Douglas D.; and Kelemen, Donald D., 4,585,131, Cl. 211-206.000.

Analog Devices, Incorporated: *See*—
Brokaw, Adrian P., 4,586,019, Cl. 338-195.000.
Gilbert, Barrie, 4,586,155, Cl. 364-841.000.

Anders, Horst-Gunther; and Diepold-Schaznitzky, Rudolf, to Siemens Aktiengesellschaft. Microprocessor fault-monitoring circuit. 4,586,180, Cl. 371-14.000.

Anderson, Cleo D., to AT&T Bell Laboratories. Maintenance response signalling arrangement for a digital transmission system. 4,586,186, Cl. 375-3.000.

Anderson, Don L., Jr.: *See*—
Beck, Boyd R.; Stewart, LaMar H.; Tapp, Steven L.; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,585,522, Cl. 202-181.000.

Anderson, Jack F.; and Melrose, Clayton, to Anderson, Jack F. Method and apparatus guiding retractable machinery. 4,585,071, Cl. 172-1.000.

Anderson, James Y. Back flash preventer for a powder spray torch. 4,585,170, Cl. 239-85.000.

Anderson, John D.: *See*—
Blizzard, William A.; Garner, James K., Jr.; and Anderson, John D., 4,585,067, Cl. 166-386.000.

Anderson, Peter D.: *See*—
Jayne, Michael E.; Anderson, Peter D.; Hoffman, James T.; and Gray, Robert B., 4,584,972, Cl. 123-56.00C.

Andersson, Bjorn; Engding, Alf; Schaub, Peter; and Agoston, Andras, to Tekniska Rontgencentralen AB. Apparatus for inspecting the interior of a reactor vessel. 4,585,610, Cl. 376-249.000.

Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical apparatus and method for detecting the focusing state and positional accuracy of a light beam directed onto an optical disk tracking guide in an optical read/write system. 4,585,933, Cl. 250-201.000.

Ando, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical disk. 4,586,173, Cl. 369-275.000.

Andorfer, Hermann, to GfE Gesellschaft fur Elektrometallurgie mbH. Method of and prealloy for the production of titanium alloys. 4,585,474, Cl. 75-10.00V.

Andre, Wolfram K., to Kurt Wolf & Co. KG. System to control and regulate heat applied during the heating phase of a steam pressure cooking vessel. 4,585,925, Cl. 219-497.000.

Andrejasich, Raymond J., to Emhart Industries, Inc. Fluid detection system. 4,586,033, Cl. 340-603.000.

Andresen, Erik E.; and Abildtrup, Jorgen, to Danfoss A/S. Valve, particularly a thermostatic valve for hot water radiators. 4,585,208, Cl. 251-96.000.

Andrews, Harry N.: *See*—
Cooper, Frank W., Jr.; Andrews, Harry N.; and Randazzo, Matthew J., 4,586,079, Cl. 358-100.000.

Angibaud, Jacques: *See*—
Manesse, Jean-Pierre; and Angibaud, Jacques, 4,585,369, Cl. 403-322.000.

Anthony, Thomas R., to General Electric Company. Grain-driven zone-melting of silicon films on insulating substrates. 4,585,493, Cl. 148-171.000.

Anzai, Kenji; Hamabe, Tatsuo; Watanabe, Ichiro; and Naganuma, Yoshiaki, to Ciba-Geigy Corporation. Method of coating fixed resistors with a one-component epoxy resin coating material and fixed resistors coated with said one-component epoxy resin coating material. 4,585,698, Cl. 428-413.000.

Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, to Sumitomo Chemical Co., Ltd.; and Nippon Stainless Steel Co., Ltd. Welding material of ferrite-austenite two-phase stainless steel and method of application. 4,585,479, Cl. 75-128.00N.

Aoki, Takashi: *See*—
Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, 4,584,908, Cl. 74-866.000.

Aoyama, Shunichi; and Kato, Manabu, to Nissan Motor Co., Ltd. Valve operation changing system of internal combustion engine. 4,584,974, Cl. 123-90.160.

Appleton Papers Inc.: *See*—
Glanz, Kenneth D., 4,586,061, Cl. 346-216.000.

Aprill, Theophil, Jr., to Allied, Inc. Air compressor test apparatus. 4,584,876, Cl. 73-168.000.

Arai, Hiroyuki, to Toyo Kenki Zeizo Kabushiki Kaisha; and Kabushiki Kaisha Komatsu Seisakusho. Hook device for locking pantograph. 4,585,910, Cl. 191-90.000.

Arbisi, Dominic; and Mitchell, Roger E. Electronic motor. 4,585,977, Cl. 318-45.000.

Arblaster, Robert K.: *See*—
Newberry, Thomas E., Jr.; Uhrmacher, Ralph R.; and Arblaster, Robert K., 4,585,650, Cl. 424-73.000.

Archibald, G. Kent, to Minnesota Mining and Manufacturing Company. IV fluid control system with fluid runaway prevention. 4,585,441, Cl. 604-245.000.

Arima, Hideo: *See*—
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, 4,586,143, Cl. 364-509.000.

Armco Inc.: *See*—
Slagle, Grady M., Jr.; and Swaim, Raymond J., 4,585,213, Cl. 254-386.000.

Armour Pharmaceutical Co.: *See*—
Landaburu, Ricardo H.; Amphlett, Godfrey W.; Branson, Roy E.; and Shaw, Arthur B., 4,585,654, Cl. 424-101.000.

Armstrong World Industries, Inc.: *See*—
Forry, John S.; and Himmelberger, Karl B., 4,585,685, Cl. 428-143.000.

Arnaud, Michel; and Corbet, Jean-Pierre, to Rhone-Poulenc Sante. Process for the preparation of 4-quinolinones. 4,585,867, Cl. 546-153.000.

Arndt, Heinrich: *See*—
Hirt, Manfred; and Arndt, Heinrich, 4,584,903, Cl. 74-675.000.

Arnegger, Richard E. Saw blade with shallow section. 4,584,999, Cl. 128-317.000.

Arnold, Dan M.; and Smith, Harry D., Jr., to Halliburton Company. Multi-function natural gamma ray logging system. 4,585,939, Cl. 250-256.000.

Arnoldt, Peter J., to Ductmate Industries, Inc. Flange type duct joint assembly and seal arrangement therefor. 4,584,756, Cl. 29-526.00R.

Arnspang, Bengt-Arne: *See*—
Lagerstedt, Jan E. R.; and Arnspang, Bengt-Arne, 4,585,498, Cl. 156-69.000.

Arntson, Lawrence E., to Welch, Robert B.; and Johnson, David O., part interest to each. Soundstage boundary expansion system. 4,586,192, Cl. 381-24.000.

Aron Kasei Co., Ltd.: *See*—
Hasegawa, Tadashi; Izumo, Kazuyuki; Enomoto, Katsuyuki; and Sugie, Nobuyoshi, 4,585,686, Cl. 428-172.000.

Artos Engineering Company: *See*—
Gudmestad, Ragnar; Dusel, Robert O.; and Berres, James, 4,584,912, Cl. 81-9.510.

Arzt, Allan H. Coal car thawing system. 4,585,178, Cl. 241-23.000.

ASA S.A.: *See*—
Faure, Jean L.; and Schoumacher, Marcel, 4,584,830, Cl. 57-328.000.

Asada, Masaaki, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,585,428, Cl. 464-68.000.

Asahi/America, Inc.: *See*—
van Lingen, H. Peter, 4,585,032, Cl. 137-862.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, 4,585,869, Cl. 546-187.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Negoro, Ikuo, 4,585,308, Cl. 350-252.000.

Asai, Kuniaki: *See*—
Saito, Teruo; Asai, Kuniaki; and Kobayashi, Tadayasu, 4,585,823, Cl. 524-456.000.

Asai, Tadamichi: *See*—
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.

Asaka, Kazuhiko: *See*—
Furuta, Katsuhisa; Nakamura, Yoshinori; and Asaka, Kazuhiko, 4,585,603, Cl. 264-40.600.

Asano, Hideki: *See*—
Eguchi, Shuji; Taketani, Noriaki; Asano, Hideki; and Wajima, Motoyo, 4,585,841, Cl. 526-240.000.

Ascer, Enrico; Morin, Lee M. E.; and Veith, Frank J. Process and apparatus for measurement of outflow resistance. 4,585,010, Cl. 128-673.000.

Asea Stal AB: *See*—
Brannstrom, Roine, 4,584,949, Cl. 110-346.000.

Ashida, Yoshinori: *See*—
Kitagawa, Nobuhisa; Hirose, Masataka; Isogaya, Kazuyoshi; and Ashida, Yoshinori, 4,585,671, Cl. 427-54.100.

Ashland Oil, Inc.: *See*—
Yancey, Robert E., Jr.; and Hettinger, William P., Jr., 4,585,545, Cl. 208-74.000.

Ashok, Sankaranarayanan; and Breedis, John F., to Olin Corporation. Beta copper base alloy adapted to be formed as a semi-solid metal slurry and a process for making same. 4,585,494, Cl. 148-435.000.

Askinazi, Joel: *See*—
Fielding, Alfred W.; Bertram, George T.; Krislav, Semyon; and Askinazi, Joel, 4,584,822, Cl. 53-452.000.

Asko Oy: *See*—
Poutiainen, Kari; and Taina, Timo, 4,585,137, Cl. 220-21.000.

Asmussen, Jes; and Reinhard, Donnie K., to Michigan State University. Method for treating a surface with a microwave or UHF plasma and improved apparatus. 4,585,668, Cl. 427-38.000.

Astra Meditec: *See*—
Lambert, Hans R., 4,585,666, Cl. 427-2.000.

AT&T Bell Laboratories: *See*—
Anderson, Cleo D., 4,586,186, Cl. 375-3.000.
Chung, Michael S.; and Shoji, Masakazu, 4,585,958, Cl. 307-473.000.
Daubert, Steven J., 4,585,961, Cl. 307-491.000.
Hartman, Adrian R.; Murphy, Bernard T.; Riley, Terence J.; and Shackle, Peter W., 4,586,073, Cl. 357-45.000.
Lie, Hans P., 4,585,956, Cl. 307-353.000.
Malik, Randhir S.; and Patoka, Martin H., 4,586,120, Cl. 363-21.000.

AT&T Technologies, Inc.: *See*—
Duncan, Hibbert A.; Ehret, Francis J.; Kahn, Sherwin R.; Kinney, Karen H.; and Parry, Peter D., 4,585,931, Cl. 235-464.000.
Gronek, Fred J.; Taradejna, Raymond M.; and Watkins, Ray A., 4,585,351, Cl. 356-388.000.

Atanasov, Nikolay A.; Lyutov, Lyudmil G.; Mircheva, Vera V.; and Stefanov, Stefan R., to Institute po Phisikochimia. Composition including an additive to sulphamate electrolytes for depositing hard nickel layers and method of using same. 4,585,531, Cl. 204-49.000.

Atkinson, Cecil G. Attachment for a harvester for picking up downed corn stalks. 4,584,825, Cl. 56-119.000.

Atobe, Takashi, to Daiwa Seiko Inc. Time measuring device for a fishing reel. 4,585,182, Cl. 242-84.10M.

Atsugi Motor Parts Co., Ltd.: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Atwell, Rex R.: *See*—
Fremow, W. Douglas; Whitworth, James R.; and Atwell, Rex R., 4,585,143, Cl. 220-462.000.

Auch, Wilfried; and Schlemper, Eberhard, to International Standard Electric Corporation. Rotation rate measuring instrument. 4,585,347, Cl. 356-350.000.

Auer, Heinz-Jochen; Klesse, Wolfgang; Quis, Peter; and Szubinski, Walther W., to Rohm GmbH. Resin binders for foundry molding sands. 4,585,809, Cl. 523-139.000.

Australian Electro Optics Pty. Limited: *See*—
Hughes, John L., 4,586,053, Cl. 346-1.100.

Autoflug GmbH: *See*—
Hansen, Holger, 4,585,190, Cl. 244-151.00B.

Automotive Products plc: *See*—
Leigh-Monstevens, Keith V., 4,585,107, Cl. 192-85.0CA.
Leigh-Monstevens, Keith V., 4,585,108, Cl. 192-85.0CA.
Shirley, Graham J., 4,585,106, Cl. 192-85.0CA.
Shirley, Graham J.; and Leigh-Monstevens, Keith V., 4,585,109, Cl. 192-85.0CA.

Autoroofs Limited: *See*—
Lievesley, John B., 4,585,269, Cl. 296-214.000.

Avotins, Peter V.; and Spitzer, Donald P., to American Cyanamid Company. High molecular weight carboxylic acids as collectors of mineral values from carbonaceous ores. 4,585,550, Cl. 209-166.000.

B. F. Goodrich Company, The: *See*—
Bok, Lowell D., 4,585,096, Cl. 188-73.370.
Kramer, James H., 4,585,215, Cl. 267-124.000.
Kramer, James H., 4,585,359, Cl. 384-98.000.

Bachelard, Roland; and Lakodey, Pierre, to Comurhex. Process for the production of uranium trioxide having a large specific surface from hydrated uranyl nitrate. 4,585,634, Cl. 423-260.000.

Bachmann, Helmut, to Kaiser Aluminium Europe Inc. Method and apparatus of cleaning residual anodes employed for fused-salt electrolysis. 4,585,538, Cl. 204-225.000.

Badaut, Roger: *See*—
Mourrier, Francis; and Badaut, Roger, 4,584,927, Cl. 92-71.000.

Bagoly, Bela A. Installer for twist lock air fitting. 4,584,754, Cl. 29-268.000.

Baier, Manfred, to Richard Wolf GmbH. Hose pump. 4,585,399, Cl. 417-477.000.

Bailey, Denis M., to Sterling Drug Inc. Gastric cytoprotection with 3,3'-thiobis[propanoic acid] in oral administration of aspirin. 4,585,764, Cl. 514-163.000.

Bailey, Raymond E.: *See*—
Altavela, Robert P.; Bailey, Raymond E.; Ewing, Joan R.; and Wallin, Edwin M., 4,585,320, Cl. 355-3.0CH.

BAJ Vickers Limited: *See*—
Clark, John, 4,585,136, Cl. 220-3.000.

Baker, David C.; Bohrer, Kathryn A.; and Flurry, Gregory A., to International Business Machines Corporation. Display terminal with a cursor responsive virtual distributed menu. 4,586,035, Cl. 340-712.000.

Baker, David S.; and Miller, Richard L., to Baker, David S. Torch tip saver. 4,585,410, Cl. 431-350.000.

Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., to Veesojuzny Ordena Trudovogo Krasnogo Znameni Naucho-Isle. Multistage helical down-hole machine with frictional coupling of working elements, and method therefor. 4,585,401, Cl. 418-5.000.

Balinski, Henry A., to United States Gypsum Company. Furring bracket for fireproofed beams. 4,584,811, Cl. 52-714.000.

Ball Corporation: *See*—
Hoyt, Mark; and Rowe, Edward A., 4,586,080, Cl. 358-106.000.

Ball, Graham C. T.: *See*—
Finch, Ronald L.; Wright, Robert L.; and Ball, Graham C. T., 4,585,973, Cl. 315-3.500.

Ballarini, Luciano, to Castelli S.p.A. Chair having a back comprising a plurality of articulated segments. 4,585,272, Cl. 297-284.000.

Balzer, Juliane: *See*—
Engelhardt, Friedrich; Kuhlein, Klaus; Balzer, Juliane; Dursch, Walter; and Kleiner, Hans-Jerg, 4,585,845, Cl. 526-240.000.

Bamberger, Charles; and Tunstill, James W. Electromagnetic implant. 4,584,994, Cl. 128-79.000.

Bando, Keiji: *See*—
Umeda, Haruhiko; Fujita, Nobuo; Bando, Keiji; Onohara, Kazuyuki; and Fujiwara, Yasuo, 4,585,431, Cl. 474-94.000.

Bangert, James G.: *See*—
Karwowski, Jan; Bangert, James G.; Ferraro, Robert F.; and Brede, Patricia M., 4,585,657, Cl. 426-285.000.

Bar-on, Menachem: *See*—
Iosef, Alexander; Bar-on, Menachem; Oren, Jacob; and Kellerman, Dagobert, 4,585,636, Cl. 423-321.00S.

Baran, Stanley J.: *See*—
Van Camp, John; and Baran, Stanley J., 4,585,633, Cl. 423-242.000.

Baranowski, Michael B.: *See*—
Martin, Richard L.; and Baranowski, Michael B., 4,585,453, Cl. 623-2.000.

Barata, Jose M. B., to Nidra Holding S.A. Double-eccentric rotary apparatus with minimal chamber volume. 4,585,404, Cl. 418-61.00R.

Barda, Henry J., to Ethyl Corporation. Flame retardant, self-extinguishing polyurethanes and polyurethane foams. 4,585,806, Cl. 521-166.000.

Barda, Rudolph C., Jr., to Clark Equipment Company. Upright for lift truck. 4,585,093, Cl. 187-9.00E.

Barker, Samuel L.; and Loberg, Michael D., to E. R. Squibb & Sons, Inc. Strontium-rubidium infusion pump with in-line dosimetry. 4,585,009, Cl. 128-655.000.

Barker, Thomas H., Jr., to Union Carbide Corporation. Process for preparing chlorosilanes from silicon and hydrogen chloride using an oxygen promoter. 4,585,643, Cl. 423-342.000.

Barlow, Dane D., to Energy Development Associates, Inc. Method and apparatus for regulating the hydrate formation temperature in a metal-halogen battery. 4,585,709, Cl. 429-19.000.

Barmag Barmer Maschinenfabrik AG: *See*—
Schippers, Heinz; Lenk, Erich; Schiminski, Herbert; and Turk, Herbert, 4,585,181, Cl. 242-43.00A.

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Hamprecht, Gerhard; and Wuerzer, Bruno, 4,585,472, Cl. 71-91.000.
Himmele, Walter; Hoffmann, Werner; and Janitschke, Lothar, 4,585,594, Cl. 260-410.90R.
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Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Schubart, Rudiger, 4,585,856, Cl. 528-388.000.
Forster, Heinz; Hofer, Wolfgang J., deceased; Schmidt, Robert R.; and Eue, Ludwig, 4,585,471, Cl. 71-90.000.
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Junge, Bodo; Goldmann, Siegfried; Thomas, Gunter; and Garthoff, Bernward, 4,585,772, Cl. 514-229.000.
Meisner, Jurgen; Traenckner, Hans-Joachim; Kremer, Wolfgang; and Muller, Manfred, 4,585,828, Cl. 524-604.000.
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Preis, Lothar; Schmidt, Rudolf; Esser, Josef; and Magg, Hans, 4,585,811, Cl. 523-206.000.
Saykowski, Franz; Wurminghausen, Thomas; Stattlegger, Hans; and Achtenberg, Theo, 4,585,849, Cl. 528-17.000.
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Beer, Henri B.; Van den Keybus, Frans A. M.; Bishara, Jeries I.; Kovatch, William A.; and Hinden, Jean M., to ELTECH Systems Corporation. Composite catalytic material particularly for electrolysis electrodes and method of manufacture. 4,585,540, Cl. 204-290.00F.

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Belknap, James L., to Mazon Corporation. Gas flow rate control regulator valve. 4,585,021, Cl. 137-100.000.

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Bellotti, Marc: *See*—
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Belvedere, Mark S. Multi-hull sailing vessel with variable lift. 4,584,957, Cl. 114-39.000.

Bender, Calvin P. Portable rotary earth drilling apparatus. 4,585,080, Cl. 175-170.000.

Benedict, Charles E., to Benedict Engineering Co., Inc. Extendable closet organizers. 4,585,127, Cl. 211-34.000.

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Benedict, Charles E., 4,585,127, Cl. 211-34.000.

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Bentley, Robert J.; Bentley, William G.; and Waters, Alan D. Brush rake. 4,584,828, Cl. 36-377.000.

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Bergler, Otto, to Black & Decker Overseas AG. Hand-held planing tool with a rotary cutter. 4,584,772, Cl. 30-475.000.
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Berman, Irwin, to Foster Wheeler Energy Corporation. Explosive welding patch unit and method. 4,585,155, Cl. 228-107.000.
Bernal, Samuel D., to Dana-Farber Cancer Institute, Inc. Monoclonal antibody with specificity to human small cell carcinoma and use thereof. 4,585,742, Cl. 436-548.000.
Bernardin, Frederick E.; Dickinson, William D.; and Mioduszewski, David, to Q.E.D. Environmental Systems, Inc. Fluid sampling apparatus. 4,585,060, Cl. 166-64.000.
Bernhard, Kurt; Muller, Robert K.; and Spruijtenburg, Robert, to Hoffmann-La Roche Inc. Cyclohexenone derivatives and process for making same. 4,585,885, Cl. 556-436.000.
Bernhard, Schuler: *See*—
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Berres, James: *See*—
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Berry, David N., to Singer Company, The. Data word normalization. 4,586,154, Cl. 364-748.000.
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Bessho, Kazuo. Alternating current motor. 4,585,984, Cl. 318-750.000.
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Bettencourt, Darryl G.: *See*—
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Bittner, Hans-Joachim, to H. Putsch GmbH & Comp. Drum cutting machine, e.g. for slicing sugar beet. 4,584,919, Cl. 83-663.000.
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Blackmore, John M.; and Bittner, Timothy, to Ioptex Inc. Intraocular lens with iris spacer mechanism. 4,585,455, Cl. 623-6.000.
Blackmore, John M., to Ioptex Inc. Corrective lens for the natural lens of the eye. 4,585,456, Cl. 623-6.000.
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Bleijerveld, Hendrik C.; and Van Den Berg, Willem, to Hollandse Signaalapparaten B.V. Video extractor. 4,586,042, Cl. 343-5.0VQ.
Blizzard, William A.; Garner, James K., Jr.; and Anderson, John D., to Camco, Incorporated. Method and apparatus for stopping well production. 4,585,067, Cl. 166-386.000.
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Cadwell, Robert M., 4,584,885, Cl. 73-862.610.
Blom, Lawrence E., to Paper Converting Machine Company. Automatic blade diameter compensation for log saws. 4,584,917, Cl. 83-174.000.
Bloom, Michael A.: *See*—
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Blount, Dale H., to United States of America, National Aeronautics and Space Administration. Propulsion apparatus and method using boil-off gas from a cryogenic liquid. 4,585,191, Cl. 244-169.000.
Blum, Alvin S. Apparatus for conservative supplemental oxygen therapy. 4,584,996, Cl. 128-204.210.
Blunck, Martin; Claussen, Uwer; and Neeff, Rutger, to Bayer Aktiengesellschaft. Anthraquinone dyestuffs, processes for their preparation, their use, and liquid-crystalline materials containing anthraquinone dyestuffs. 4,585,574, Cl. 252-299.100.
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Bocci, Giorgio; Brizielli, Sando; Triuzzi, Agostino; and Deplano, Stefano, to ITALIMPIANTI Societa Italiana Impianti p.a. Method and walking beam furnace for the intermediate heating of pipes in hot rolling mills. 4,585,411, Cl. 432-11.000.
Bocher, Jean L., to Societe Anonyme Dite: Les Cables de Lyon. Coaxial cable core extension. 4,585,289, Cl. 339-89.00C.
Bock, Jan; Kowalik, Ralph M.; and Valint, Paul L., to Exxon Research and Engineering Co. Drag reduction agent. 4,585,810, Cl. 523-175.000.
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Boise Cascade Corporation: *See*—
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Mioen, Thomas K., 4,585,477, Cl. 75-117.000.
Boltze, Karl-Heinz, to Troponwerke GmbH & Co. KG. Process for the preparation of 1-(4-chlorobenzoyl)-5-methoxy-2-methyl-3-indoleacetoxyacetic acid. 4,585,880, Cl. 548-501.000.
Bomman, Keith H. Roofers square and cap cutter. 4,584,775, Cl. 33-188.000.
Bommaraju, Tilak V.; Hauck, William V.; and Lloyd, Vernon J., to Occidental Chemical Corporation. Suppression of corrosion in caustic manufacturing systems. 4,585,579, Cl. 252-387.000.
Booth, John L., to Booth Manufacturing Co. Automatic cartoning machine and method for packaging articles such as fruit. 4,584,821, Cl. 53-448.000.
Booth, Llewellyn D.: *See*—
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Booz, A. David; Buchovecky, Kalman E.; Cebulak, Walter S.; Kuchera, Ray A.; and White, David D., Jr., to Aluminum Company of

America. Method for controlling the production of atomized powder. 4,585,601, Cl. 264-12.000.
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Hansen, John C.; and Ginder, Harold B., 4,584,845, Cl. 62-201.000.
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Fox, Clarence D., 4,585,030, Cl. 137-625.640.
Bose, Bimal K., to General Electric Company. Method of real time operating point identification and pole adjustment for an induction motor drive system. 4,585,985, Cl. 318-803.000.
Bosley, Robert W. Magnetic levitation system. 4,585,282, Cl. 308-10.000.
Bosse, Gene P., to Eaton Corporation. High speed redundancy processor. 4,586,178, Cl. 371-10.000.
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Bottomley, Paul A., to General Electric Company. Method for selective NMR imaging of chemically-shifted nuclei. 4,585,993, Cl. 324-309.000.
Boudakian, Max M., to Olin Corporation. Process for oxidizing halopyridines to halopyridine-N-oxides. 4,585,871, Cl. 546-345.000.
Bouffard, Serge J. H.; Zuppiroli, Libero; Jerome, Denis; and Bechgaard, Klaus, to Centre National de la Recherche Scientifique. Microcircuits formed from substrates of organic quasiunidimensional conductors. 4,586,062, Cl. 357-5.000.
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Bowe, Woodford A.; Largione, Robert; and Levy, Eugene J., to AE/CDS, Autoclave, Inc. Chemical microreactor having close temperature control. 4,585,622, Cl. 422-50.000.
Bowes, Emmerson; Farcasiu, Malvina; and Scott, Eric J. Y., to Mobil Oil Corporation. Hydrotreating petroleum heavy ends in aromatic solvents with large pore size alumina. 4,585,546, Cl. 208-253.000.
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Boyer, Kent R.; and Cobb, Clyde E., to HR Textron Inc. Linear actuator suspension system. 4,585,216, Cl. 267-150.000.
Boyington, Richard. Toothbrush sanitizer devices. 4,585,119, Cl. 206-209.100.
Boyse, George C., to Down River International, Inc. Void filler. 4,585,381, Cl. 410-154.000.
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Bracewell, Philip A.; and Klement, Uri R., to Imperial Chemical Industries PLC. Photogrammetric method. 4,586,145, Cl. 364-512.000.
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Bradley, Norman, to National Nuclear Corporation Limited. Apparatus for sampling fluid flow. 4,584,888, Cl. 73-863.820.
Braig, James R.; and Liston, Max D., to Liston Edwards, Inc. Infrared gas analyzer using count quadrature sampling. 4,586,026, Cl. 340-347.0AD.
Brandes, Karlheinz K.: *See*—
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Brannstrom, Roine, to Asea Stal AB. Method of igniting a combustion chamber with a fluidized bed and a power plant for utilizing the method. 4,584,949, Cl. 110-346.000.
Branson, Roy E.: *See*—
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Brasher, Tallie J. Exercising apparatus. 4,585,229, Cl. 272-123.000.
Brayman, Semyon. Method and fixture for leak detection. 4,584,877, Cl. 73-40.700.
Brazeau, Paul E., Jr.; Bohlen, Peter; Esch, Frede[illegible]; Ling, Nicholas C.; and Guillemin, Roger C. L., to Salk Institute for Biological Studies, The. Bovine GRF. 4,585,756, Cl. 514-12.000.
Brede, Patricia M.: *See*—
Karwowski, Jan; Bangert, James G.; Ferraro, Robert F.; and Brede, Patricia M., 4,585,657, Cl. 426-285.000.
Breedis, John F.: *See*—
Ashok, Sankaranarayanan; and Breedis, John F., 4,585,494, Cl. 148-435.000.
Brennan, Mark S. U-channel storage system. 4,585,130, Cl. 211-190.000.
Brennfleck, Karl: *See*—
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.
Bresson, Richard J., to Eastman Kodak Company. Track number indicator. 4,586,102, Cl. 360-133.000.
Briggs, John R., to Union Carbide Corporation. Preparation of organometalates. 4,585,883, Cl. 556-42.000.
Bringhurst, Edward D., to Mannesmann Tally Corporation. Long release coil hammer actuating mechanism. 4,584,937, Cl. 101-93.040.
Brion, Alain. Word store equipped with an address code conversion circuit. 4,586,024, Cl. 340-347.0DD.
Brissonneau et Lotz Marine: *See*—
Lemaire, Marc; and Le Roc'h, Roland, 4,585,079, Cl. 173-164.000.
Bristol Composite Materials Engineering Ltd.: *See*—
Curnow, Richard D., 4,585,683, Cl. 428-71.000.
Bristol-Myers Company: *See*—
Adams, Samuel G., 4,585,254, Cl. 283-81.000.
Dolak, Terence M., 4,585,773, Cl. 514-253.000.
British Aerospace Public Limited Company: *See*—
Clifford-Jones, John B., 4,585,192, Cl. 244-214.000.
British-American Tobacco Company Limited: *See*—
Barnes, Adrian G.; and Bevan, Peter C., 4,585,737, Cl. 435-126.000.
British Library Board, The: *See*—
Malyon, Brian R., 4,585,334, Cl. 355-25.000.
British Nuclear Fuels Limited: *See*—
Connolly, Paul A., 4,584,930, Cl. 98-115.300.
British Petroleum Company P.L.C., The: *See*—
Barri, Sami A. I.; and Young, Dennis, 4,585,641, Cl. 423-331.000.
Morris, George E.; Nay, Barry; and Stewart, David G., 4,585,799, Cl. 518-717.000.
Morris, George E., 4,585,891, Cl. 560-204.000.
Britton, Robert E.: *See*—
Cloudy, Westley R.; Britton, Robert E.; and Snodgrass, Anthony D., 4,584,849, Cl. 62-380.000.
Brizielli, Sando: *See*—
Bocci, Giorgio; Brizielli, Sando; Triuzzi, Agostino; and Deplano, Stefano, 4,585,411, Cl. 432-11.000.
Broderick, Dennis W.; and Vincent, Harold L., to Dow Corning Corporation. Hard organopolysiloxane release coating. 4,585,705, Cl. 428-447.000.
Brokaw, Adrian P., to Analog Devices, Incorporated. Matching of resistor sensitivities to process-induced variations in resistor widths. 4,586,019, Cl. 338-195.000.
Bromley, Clinton E.: *See*—
Stevens, Robert J.; and Bromley, Clinton E., 4,585,076, Cl. 172-240.000.
Bronson, Bruce A.; and Vanetik, Anatoly, to Sanders Associates, Inc. Cooperating cover mechanisms. 4,585,139, Cl. 220-256.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Kuzuya, Susumu, 4,585,224, Cl. 271-127.000.
Brotton, James: *See*—
Wilman, Hugh; and Brotton, James, 4,586,090, Cl. 358-285.000.
Broughton, Roger; and da Costa, Bernardo, to Canadian Patents & Development Limited. Conjugate eye movement detector for sleep analysis. 4,585,011, Cl. 128-733.000.
Brown, Boveri & Cie AG: *See*—
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.
Brown Boveri Reaktor GmbH: *See*—
Day, Bobby L., 4,585,608, Cl. 376-245.000.
Brown, Edmund J.; and Miller, Kenneth L., to Xico, Inc. Magnetic stripe media reader modules and cariers for magnetic head reader/encoders for such media. 4,585,929, Cl. 235-449.000.
Brown, George L.; de Sorgo, Miksa; and Spencer, Arthur T., to SCM Corporation. Aqueous coating composition comprising self-emulsifiable ester of epoxy and acid containing addition polymer and method of its preparation. 4,585,813, Cl. 523-409.000.
Brown, Leland T., to Motorola, Inc. Overvoltage protection circuit for SLIC. 4,585,905, Cl. 179-16.0AA.
Brown, Neil L.: *See*—
Frechet, Daniel; Nedelec, Lucien; Plassard, Guy; and Brown, Neil L., 4,585,770, Cl. 514-214.000.
Brown & Root, Inc.: *See*—
Regalbuto, John A.; and Dailey, James E., 4,585,374, Cl. 405-227.000.
Brown & Williamson Tobacco Corporation: *See*—
Silberstein, Donald A., 4,585,015, Cl. 131-339.000.
Brownlee, Robert R., to Cardiac Control Systems, Inc. Heart pacing and intracardiac electrogram monitoring system and associated method. 4,585,004, Cl. 128-419.0PT.
Broz, Joseph: *See*—
Zimmerman, S. Mort; and Broz, Joseph, 4,586,115, Cl. 362-217.000.
Bruel, Michel; Soubie, Alain; and Spinelli, Philippe, to Commissariat a l'Energie Atomique. Process and apparatus for implanting particles in a solid. 4,585,945, Cl. 250-492.200.
Brummett, Barry J., to Taco Bell. Heating apparatus and method of heating a food product. 4,585,661, Cl. 426-520.000.
Brunswick Corporation: *See*—
Puryear, John W., 4,585,183, Cl. 242-84.52B.
Bryce, William D., Jr., to USM Corporation. Easily removable rivet with tab. 4,585,382, Cl. 411-34.000.
Buchaklian, Robert A., Jr.: *See*—
Butkovich, Joseph J.; Buchaklian, Robert A., Jr.; and Campbell, Gregory, 4,585,164, Cl. 236-51.000.

Buchel, Karl H.: *See*—
Plempel, Manfred; Bucheler, Manfred; Gau, Wolfgang; Regel, Erik; Buchel, Karl H.; and Ploschke, Hans-Jurgen, 4,585,782, Cl. 514-396.000.

Bucheler, Manfred: *See*—
Plempel, Manfred; Bucheler, Manfred; Gau, Wolfgang; Regel, Erik; Buchel, Karl H.; and Ploschke, Hans-Jurgen, 4,585,782, Cl. 514-396.000.

Buchovecky, Kalman E.: *See*—
Booz, A. David; Buchovecky, Kalman E.; Cebulak, Walter S.; Kuchera, Ray A.; and White, David D., Jr., 4,585,601, Cl. 264-12.000.

Buckingham, Donald F., to Buckingham Graphics, Inc. Vacuum printing apparatus. 4,585,340, Cl. 355-91.000.

Buckingham Graphics, Inc.: *See*—
Buckingham, Donald F., 4,585,340, Cl. 355-91.000.

Buckley, Ronald E. Apparatus for truing a spoked wheel. 4,585,046, Cl. 157-1.550.

Budd Company, The: *See*—
Corrigan, James I.; and Lunova, Casper P., 4,585,918, Cl. 219-110.000.

Budd, George V. Apparatus for repairing or protecting an engine exhaust system. 4,585,091, Cl. 181-243.000.

Budziak, Frank W.; Burton, James O.; and Ahlin, Frank J., to Richman Brothers Company. Electronic measuring device. 4,586,150, Cl. 364-562.000.

Buelow, Jack: *See*—
Beacham, Robert C.; Switek, Robert E., Jr.; and Buelow, Jack, 4,585,150, Cl. 222-129.000.

Buhler, Karl, to BBC Brown, Boveri & Co., Ltd. Apparatus for converting a three-phase arc furnace to d.c. operation. 4,586,188, Cl. 373-108.000.

Bujadoux, Karel; and Neyer, Jean-Marie, to Societe Chimique des Charbonnages S.A. Catalyst containing an aromatic silicon compound for the polymerization of ethylene. 4,585,839, Cl. 526-114.000.

Bullock, Derek J.: *See*—
Old, John L.; Jenkins, Gorden P.; and Bullock, Derek J., 4,584,899, Cl. 74-532.000.

Bult, Roelof P.; Schroeder, Ted E.; and Needham, James G., to Cominco Ltd. Method of growing gallium arsenide crystals using boron oxide encapsulant. 4,585,511, Cl. 156-607.000.

Buote, William J., to Zymark Corporation. Self-configuring computerized robot control system. 4,586,151, Cl. 364-513.000.

Burlingame, Glen. Pick-proof locking system. 4,584,855, Cl. 70-38.00A.

Burndy Corporation: *See*—
Noschese, Rocco J., 4,585,291, Cl. 339-117.00R.

Burney, Harry S., Jr.; and Calvin, Donald W., to Dow Chemical Company, The. Re-use of fluoropolymer membranes. 4,585,801, Cl. 521-46.000.

Burnham, Robert; and Holonyak, Nick, Jr., to Xerox Corporation. Wavelength tuning of quantum well lasers by thermal annealing. 4,585,491, Cl. 148-1.500.

Burroughs Corporation: *See*—
DeWoskin, Dale S., 4,586,128, Cl. 364-200.000.
Horvath, Carlos F., 4,586,127, Cl. 364-200.000.
Steckler, Thomas M., 4,586,133, Cl. 364-200.000.

Burrows, Bruce D. Combined purified water dispensing device and reject water control device. 4,585,554, Cl. 210-110.000.

Burry-Lu, Inc.: *See*—
Price, Floyd W., 4,584,933, Cl. 99-450.400.

Burt, Michael; Keni, Eli; and Grasman, Ami, to Morphore Ltd. Building structure including a polyhyparic surface. 4,584,800, Cl. 52-63.000.

Burton, James O.: *See*—
Budziak, Frank W.; Burton, James O.; and Ahlin, Frank J., 4,586,150, Cl. 364-562.000.

Busch, Alfred; and Kosmas, Sardelis, to Procter & Gamble Company, The. Granular detergent compositions containing organo-functional polysiloxanes. 4,585,563, Cl. 252-8.800.

Buschbom, Floyd E.; Hansen, Glen D.; and Henke, Donald L., to Veda, Inc. Bottom unloader. 4,585,385, Cl. 414-311.000.

Busse, James G. Cellular glass reinforced composite material. 4,585,690, Cl. 428-304.400.

Butkovich, Joseph J.; Buchaklian, Robert A., Jr.; and Campbell, Gregory. Portable energy level control system. 4,585,164, Cl. 236-51.000.

Butterwick, Gilbert N., to RCA Corporation. Electron discharge device having a substantially spherical electrostatic field lens. 4,585,935, Cl. 250-213.0VT.

Butts, H. Bruce, Jr.; Cutler, David N.; Schnorr, Peter C.; and Short, Robert T., to Digital Equipment Corporation. Central processing unit for a digital computer. 4,586,130, Cl. 364-200.000.

Buxton, John A., to Lockheed Corporation. Counterbalanced cowling assembly for a pylon-mounted engine and nacelle therefor. 4,585,189, Cl. 244-54.000.

Cada, Frantisek: *See*—
Dykast, Jaroslav; Cada, Frantisek; and Kubovy, Miroslay, 4,584,833, Cl. 57-405.000.

Cadwell, Robert M., to Aine, Harry E.; and Block, Barry. Capacitive detector for transducers. 4,584,885, Cl. 73-862.610.

Cadzow, Mark D.; Elkes, Graham J.; Ewin, Gavin J.; and Mainwaring, David E., to BP Australia Limited. Recovery of metal values from mineral ores by incorporation in coal-oil agglomerates. 4,585,548, Cl. 209-5.000.

Calabro, Anthony S. Belt buckle. 4,584,743, Cl. 24-180.000.

Calvin, Donald W.: *See*—
Burney, Harry S., Jr.; and Calvin, Donald W., 4,585,801, Cl. 521-46.000.

Cambrodon, Francisco, to Societe de Paris et du Rhone. Device for holding and centering of a brush holder washer, during assembly, on an electric rotating commutator machine. 4,585,968, Cl. 310-239.000.

Camco, Incorporated: *See*—
Blizzard, William A.; Garner, James K., Jr.; and Anderson, John D., 4,585,067, Cl. 166-386.000.

Campbell, Gregory: *See*—
Butkovich, Joseph J.; Buchaklian, Robert A., Jr.; and Campbell, Gregory, 4,585,164, Cl. 236-51.000.

Campbell Soup Company: *See*—
Cramer, Clarence W., 4,585,040, Cl. 141-137.000.

Campbell, Willis R.: *See*—
Merkey, John A.; Uhland, Francis L., Jr.; Campbell, Willis R.; and Bowden, Donald P., Jr., 4,584,827, Cl. 56-341.000.

Canadian Patents & Development Limited: *See*—
Broughton, Roger; and da Costa, Bernardo, 4,585,011, Cl. 128-733.000.
Lemal, Clayton, 4,584,844, Cl. 62-160.000.

Canlas, Prudencio S.: *See*—
Fealey, William S.; and Canlas, Prudencio S., 4,585,154, Cl. 227-109.000.

Cann, Alfred J., to Sanders Associates, Inc. Pulse width to voltage converter circuit. 4,585,960, Cl. 307-490.000.

Cannata, Joseph M. Positive interconnect system for fireplace inserts. 4,584,986, Cl. 126-123.000.

Canon Kabushiki Kaisha: *See*—
Haruta, Masahiro; Nakousai, Tadayuki; Iwata, Kazuo; and Nakousai, Keiko, 4,585,484, Cl. 106-22.000.
Ishiwata, Kazuya; and Iijima, Shigeharu, 4,585,312, Cl. 350-357.000.
Kurita, Kenji, 4,586,054, Cl. 346-76.0PH.
Minoura, Kazuo; and Matsuoka, Kazuhiko, 4,585,296, Cl. 350-6.500.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,719, Cl. 430-59.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,720, Cl. 430-57.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,721, Cl. 430-84.000.
Tamura, Shuichi; and Iizuka, Kiyoshi, 4,586,029, Cl. 340-540.000.
Tateoka, Masamichi, 4,585,314, Cl. 350-464.000.
Ueda, Hiroyuki, 4,585,360, Cl. 400-63.000.

Cantello, Maichi: *See*—
Mattei, Riccardo; Neri, Armando; Gobbi, Santo R.; and Cantello, Maichi, 4,585,919, Cl. 219-121.0LK.

Capdepuy, Bernard: *See*—
Minjolle, Louis; Drouet, Claudette; Lengronne, Bernard; Hordonneau, Alain; and Capdepuy, Bernard, 4,585,500, Cl. 156-89.000.

Capecchi, Floriano, to Cima Impianti S.p.A. Apparatus for handling tires to and from a vulcanizing machine. 4,585,405, Cl. 425-18.000.

Capelle, Ernest A., Jr., to United States of America, Navy. Container for multichip hybrid package. 4,585,121, Cl. 206-331.000.

Capelle, Gerd, to Hermann Berstorff Maschinenbau GmbH. Method for feeding a number of strips of material into a single- or multiple-extruder system. 4,585,602, Cl. 264-37.000.

Cardiac Control Systems, Inc.: *See*—
Brownlee, Robert R., 4,585,004, Cl. 128-419.0PT.

Carl Hasse & Wrede GmbH: *See*—
Conseur, Joachim, 4,584,901, Cl. 74-574.000.

Carl Still GmbH & Co. KG, Firma: *See*—
Thiersch, Friedrich; Strobel, Manfred; and Dahlkamp, Heinz-Leo, 4,585,521, Cl. 202-141.000.

Carl Sulberg GmbH & Co.: *See*—
Konen, Karl-Heinz, 4,584,739, Cl. 16-266.000.

Carlini, Filippo M.: *See*—
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Pontevivo, Michele, 4,585,864, Cl. 546-14.000.

Carlson, Donald A. Portable conflict monitor testing apparatus. 4,586,041, Cl. 340-931.000.

Carpenter Technology Corporation: *See*—
Frantz, Earl L., 4,585,707, Cl. 428-619.000.

Carrera, Cesare; and Formenti, Giuseppe, to Pneumatici Clement S.p.A. Tubular tire for cycles. 4,585,044, Cl. 152-165.000.

Carrier Corporation: *See*—
Gray, Kenneth, 4,584,765, Cl. 29-727.000.
Gray, Kenneth P.; and Greever, James E., 4,584,751, Cl. 29-157.30C.

Carson, John R., to McNeilab, Inc. Pyrrole-2-acetylamino acid derivative compounds. 4,585,784, Cl. 514-423.000.

Carter, Dennis L. Bed-ridden patient support. 4,584,731, Cl. 5-431.000.

Carter, Keegan. Dividing head with cam and thread cutting facility. 4,585,378, Cl. 409-67.000.

Cartmell, James V., to NDM Corporation. Medical electrodes and dispensing conditioner therefor. 4,584,962, Cl. 118-43.000.

Carver, Robert W. Audio amplifying apparatus and method. 4,586,002, Cl. 330-297.000.

Casden, Martin, to Soundcraft, Inc. Slotless magnetic card reader. 4,585,930, Cl. 235-449.000.

Cassella Aktiengesellschaft: *See*—
Engelhardt, Friedrich; Kuhlein, Klaus; Balzer, Juliane; Dursch, Walter; and Kleiner, Hans-Jerg, 4,585,845, Cl. 526-240.000.

Casselman, Chantal; Malet, Jean C.; Sophy, Yvon; and Pacton, Roger, to Commissariat a l'Energie Atomique. Protective structure for the

floor of a concrete enclosure having to contain a high temperature fluid. 4,584,802, Cl. 52-169.700.

Castelli S.p.A.: *See*—
Ballarini, Luciano, 4,585,272, Cl. 297-284.000.

Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., to Texas Instruments Incorporated. Microcomputer having data move circuits for within-memory shift of data words. 4,586,131, Cl. 364-200.000.

Cavalleri, Bruno: *See*—
Malabarba, Adriano; Cavalleri, Bruno; and Ferrari, Pietro, 4,585,589, Cl. 260-239.30P.

Cavanagh, Leo J. Bag filling apparatus. 4,585,041, Cl. 141-231.000.

Cebulak, Walter S.: *See*—
Booz, A. David; Buchovecky, Kalman E.; Cebulak, Walter S.; Kuchera, Ray A.; and White, David D., Jr., 4,585,601, Cl. 264-12.000.

Cellini, Ferdinando, to Farm DI F.S.a.s. Corkscrew device. 4,584,911, Cl. 81-3.360.

Central Mine Equipment: *See*—
Rassieur, Charles L.; and Pierce, Dean T., 4,585,256, Cl. 285-190.000.

Centre National de la Recherche Scientifique: *See*—
Bouffard, Serge J. H.; Zuppiroli, Libero; Jerome, Denis; and Bechgaard, Klaus, 4,586,062, Cl. 357-5.000.

Centre National de la Recherche Scientifique (CNRS): *See*—
Berteaud, Andre-Jean; Clement, Rene; and Germain, Alain, 4,585,699, Cl. 428-418.000.

Ceraver: *See*—
Minjolle, Louis; Drouet, Claudette; Lengronne, Bernard; Hordonneau, Alain; and Capdepuy, Bernard, 4,585,500, Cl. 156-89.000.

Cerberus AG: *See*—
Forster, Martin, 4,584,867, Cl. 73-23.000.

Ceserani, Roberto: *See*—
Faustini, Franco; Panzeri, Achille; Orzi, Fabrizio; di Salle, Enrico; and Ceserani, Roberto, 4,585,791, Cl. 514-471.000.

Chadwick, George F.; and Kennedy, Lawrence A., to FMC Corporation. Catalytic thermal oxidation of methyl isocyanate in waste gases. 4,585,625, Cl. 423-236.000.

Chalilpoyil, Purush; Rea, Jesse R.; Parsen, Frank E.; and Wang, Chih-Chung, to Duracell Inc. Cell corrosion reduction. 4,585,716, Cl. 429-206.000.

Chambors, John M.; and Lum, Francis, to Irwin Magnetic Systems, Inc. Method and apparatus for pre-recording tracking information on magnetic media. 4,586,094, Cl. 360-77.000.

Champion International Corporation: *See*—
Hall, Charles T.; Woodard, Harry L.; Terry, Jimmy C.; Willis, Curtiss O.; and Hendrix, Phil W., 4,584,914, Cl. 81-176.150.
Overholt, Steven D., 4,585,501, Cl. 156-205.000.

Champion Spark Plug Company: *See*—
Lenk, Michael; and Podiak, Richard S., 4,584,977, Cl. 123-196.00S.

Chandler, Howard M., to Allelix Inc. Device for performing quantitative chemical and immunochemical assays. 4,585,623, Cl. 422-57.000.

Chandler, Jimmy E.: *See*—
Sims, Edward M.; and Chandler, Jimmy E., 4,586,038, Cl. 340-729.000.

Chap, John P., to Selfix, Inc. Fixture mounting arrangement. 4,585,199, Cl. 248-359.000.

Chapman, Glenn H.: *See*—
Raffel, Jack I.; Yasaitis, John A.; Chapman, Glenn H.; and Naiman, Mark L., 4,585,490, Cl. 148-1.500.

Chart Industries Limited: *See*—
Chartier, Guy N.; and Wickmann, John T., 4,585,198, Cl. 248-352.000.

Chartier, Guy N.; and Wickmann, John T., to Chart Industries Limited. Anchoring system. 4,585,198, Cl. 248-352.000.

Chastang, Jean-Claude A.; Hildenbrand, Walter W.; and Levanoni, Menachem, to International Business Machines Corporation. Ultrafast photometric instrument. 4,585,348, Cl. 356-369.000.

Chazelas, Elie C.; Cheron, Philippe R. P.; and Martin, Charles L. Device for arraying the ends of optical fibers disposed around an axially symmetrical structure. 4,585,305, Cl. 350-96.210.

Chem Systems Inc.: *See*—
Gelbein, Abraham P.; and Hansen, Robert, 4,585,899, Cl. 568-435.000.
Holy, Norman L.; Gelbein, Abraham P.; and Hansen, Robert, 4,585,900, Cl. 568-435.000.

Chen, Wuu N.: *See*—
Wang, Chun S.; Bowden, Robert L.; and Chen, Wuu N., 4,585,838, Cl. 525-507.000.

Cheron, Philippe R. P.: *See*—
Chazelas, Elie C.; Cheron, Philippe R. P.; and Martin, Charles L., 4,585,305, Cl. 350-96.210.

Chessin, Hyman: *See*—
McMullen, Warren H.; Chessin, Hyman; and Jones, Allen R., 4,585,530, Cl. 204-34.000.

Chevrollier, Guy, to Societe d'Applications Generales. Device for rotating, at will and step by step, a shaft driven from a driving shaft. 4,584,890, Cl. 74-113.000.

Chevron Research Company: *See*—
Hess, Larry, 4,586,184, Cl. 372-28.000.
Wollenberg, Robert H., 4,585,566, Cl. 252-51.50A.

Chiba, Akihiko: *See*—
Kawahara, Akira; and Chiba, Akihiko, 4,584,741, Cl. 24-68.0CD.

Chicago Bridge & Iron Company: *See*—
Pronger, Oliver M., Jr.; and Heavener, Charles M., 4,584,843, Cl. 62-123.000.

Chikaraishi, Takayo; and Yui, Yasuo, to Nissan Motor Company, Limited. Shield arrangement for a control lever of a vehicle sliding-door lock. 4,585,257, Cl. 292-1.000.

Chintyan, James R.: *See*—
Lippmann, Raymond; and Chintyan, James R., 4,586,105, Cl. 361-117.000.

Chisso Corporation: *See*—
Konotsune, Shiro; Higashi, Hiromi; Wada, Masami; Maehara, Hiroshi; and Tsuji, Kazuyuki, 4,585,834, Cl. 525-342.000.
Sugimori, Shigeru; Isoyama, Toyoshiro; Goto, Yasuyuki; and Ogawa, Tetsuya, 4,585,575, Cl. 252-299.610.

Chittick, Donald E. Fuel gas-producing pyrolysis reactors. 4,584,947, Cl. 110-229.000.

Chloe Chimie: *See*—
Laroche, Paul; and Pompon, Jean-Bernard, 4,585,842, Cl. 526-62.000.

Cho, Thomas B., to Du Pont de Nemours, E. I., and Company. Antistatic backing layer with auxiliary layer for a silver halide element. 4,585,730, Cl. 430-527.000.

Choay, Patrick: *See*—
Roger, Pierre; Choay, Patrick; and Fournier, Jean-Paul, 4,585,769, Cl. 514-212.000.

Chong, Yat O.: *See*—
Leung, Leung S.; and Chong, Yat O., 4,585,051, Cl. 165-1.000.

Christensen, Jorgen A.: *See*—
Lassen, Jorgen B.; Christensen, Jorgen A.; Petersen, Erling N.; and Hansen, John B., 4,585,777, Cl. 514-317.000.

Christman, Donald L., to BASF Corporation. Rigid polyurethane foams employing oxyalkylated ethylenediamine. 4,585,807, Cl. 521-167.000.

Chulich, Anthony J. High-capacity food warmer cover. 4,585,142, Cl. 220-331.000.

Chung, Michael S.; and Shoji, Masakazu, to AT&T Bell Laboratories. IC chip with noise suppression circuit. 4,585,958, Cl. 307-473.000.

Ciba Geigy AG: *See*—
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,585,761, Cl. 514-43.000.

Ciba-Geigy Corporation: *See*—
Anzai, Kenji; Hamabe, Tatsuo; Watanabe, Ichiro; and Naganuma, Yoshiaki, 4,585,698, Cl. 428-413.000.
Defago, Raymond; and Sutterlin, Wolfgang, 4,585,820, Cl. 524-232.000.
Fischer, Walter; Finter, Jurgen; and Zweifel, Hans, 4,585,876, Cl. 548-423.000.
Jost, Max; Iqbal, Abul; and Rochat, Alain C., 4,585,878, Cl. 548-453.000.
Schwander, Hansrudolf; Markert, Jurgen; and Aeschlimann, Peter, 4,585,460, Cl. 8-549.000.

Ciba Vision Care Corporation: *See*—
Giefer, Gunter, 4,585,488, Cl. 134-27.000.

Cichanowski, Stanley W., to SFE Technologies. Capacitor with dielectric comprising a polymer of polyacrylate polyether pre-polymer. 4,586,111, Cl. 361-323.000.

Cima Impianti S.p.A.: *See*—
Capecchi, Floriano, 4,585,405, Cl. 425-18.000.

Cimochowski, Anthony E.: *See*—
Hounsel, Mack A.; and Cimochowski, Anthony E., 4,584,814, Cl. 52-747.000.

Cioca, Gheorghe, to Seton Company. Cosmetic and pharmaceutical sheet material containing polypeptides. 4,585,797, Cl. 514-773.000.

Ciszek, Andrew, to RCA Corporation. Notch filter. 4,586,007, Cl. 333-175.000.

Citta, Richard W.; Sgrignoli, Gary J.; and Mutzabaugh, Dennis M., to Zenith Electronics Corporation. CATV upstream signal transmission at nonharmonic video frequencies. 4,586,078, Cl. 358-86.000.

Clar, Georges: *See*—
Styskal, Pierre; Guicherd, Laurent; and Clar, Georges, 4,585,613, Cl. 376-260.000.

Clarion Co., Ltd.: *See*—
Okada, Hitoshi, 4,586,096, Cl. 360-96.500.

Clark Equipment Company: *See*—
Barda, Rudolph C., Jr., 4,585,093, Cl. 187-9.00E.

Clark, John, to BAJ Vickers Limited. Attachment of rings to articles. 4,585,136, Cl. 220-3.000.

Clarke, Donald A.: *See*—
Liptay-Wagner, Nicholas; Renaud, Roland; Pryor, Timothy R.; and Clarke, Donald A., 4,585,947, Cl. 250-560.000.

Clarke, John: *See*—
Hilbert, Claude; Martinis, John M.; and Clarke, John, 4,585,999, Cl. 330-61.00R.

Claussen, Uwer: *See*—
Blunck, Martin; Claussen, Uwer; and Neeff, Rutger, 4,585,574, Cl. 252-299.100.

Claypole, Timothy C.: *See*—
Syred, Nicholas; Biffin, Martin; and Claypole, Timothy C., 4,584,948, Cl. 110-264.000.

Clecak, Nicholas J.; Cox, Robert J.; Feng, Joseph S.; and Leff, Jerry, to International Business Machines Corporation. Alignment layer orientation in raster scan thermally addressed smectic liquid crystal displays. 4,585,310, Cl. 350-341.000.

Clegg, John E. Flat circular foil-filament lamp. 4,585,971, Cl. 313-341.000.

Clement, Albrecht; Mayer, Dieter; and Wild, Ernst, to Robert Bosch GmbH. Arrangement for a fuel metering system for an internal combustion engine. 4,584,982, Cl. 123-489.000.

Clement, Rene: *See*—
Berteaud, Andre-Jean; Clement, Rene; and Germain, Alain, 4,585,699, Cl. 428-418.000.
Clevinger, Brian L.; Haddad, John G.; and Teitelbaum, Steven L. Method of assay for vitamin D metabolites. 4,585,741, Cl. 436-542.000.
Clifford-Jones, John B., to British Aerospace Public Limited Company. Leading edge arrangements for aircraft wings. 4,585,192, Cl. 244-214.000.
Clorox Company, The: *See*—
Beacham, Robert C.; Switek, Robert E., Jr.; and Buelow, Jack, 4,585,150, Cl. 222-129.000.
Cloudy & Britton, Inc.: *See*—
Cloudy, Westley R.; Britton, Robert E.; and Snodgrass, Anthony D., 4,584,849, Cl. 62-380.000.
Cloudy, Westley R.; Britton, Robert E.; and Snodgrass, Anthony D., to Cloudy & Britton, Inc. Food freezing tunnel. 4,584,849, Cl. 62-380.000.
Coal Industry (Patents) Limited: *See*—
Syred, Nicholas; Biffin, Martin; and Claypole, Timothy C., 4,584,948, Cl. 110-264.000.
Syred, Nicholas; Biffin, Martin; and Owen, Ieuan, 4,585,466, Cl. 55-349.000.
Cobb, Clyde E.: *See*—
Boyer, Kent R.; and Cobb, Clyde E., 4,585,216, Cl. 267-150.000.
Coburn, Heath M.: *See*—
Adams, Jack E.; Adams, Dudley D.; and Coburn, Heath M., 4,584,950, Cl. 211-41.000.
Coca-Cola Company, The: *See*—
Richter, Simon J., 4,585,146, Cl. 222-1.000.
Codex Corporation: *See*—
Gallager, Robert G., 4,586,182, Cl. 371-30.000.
Codur, Yves: *See*—
Tivolle, Alain; Roumegoux, Bernard; Delhaye, Gerard; Codur, Yves; and Mittaine, Bernard, 4,584,746, Cl. 29-81.00B.
Cody, Tommy D.: *See*—
Reid, Lee R.; and Cody, Tommy D., 4,585,991, Cl. 324-158.00P.
Colarusso, Peter C.; and Sindat, Bahram, to W. R. Grace & Co. Roofing membranes. 4,585,682, Cl. 428-57.000.
Colborn, Wayne T.: *See*—
Davenport, William R., Sr.; and Colborn, Wayne T., 4,585,376, Cl. 408-110.000.
Colditz, Eugene F.: *See*—
Grills, Laurence M.; and Colditz, Eugene F., 4,584,726, Cl. 4-378.000.
Cole, Paul M., to Du Pont de Nemours, E. I., and Company. Sample container for a top loading swinging bucket centrifuge rotor. 4,585,433, Cl. 494-20.000.
Cole, Paul M., to Du Pont de Nemours, E. I., and Company. Top loading swinging bucket centrifuge rotor having knife edge pivots. 4,585,434, Cl. 494-20.000.
Coleco Industries, Inc.: *See*—
Amici, Francis R.; Berger, Hans S.; and McNett, John P., 4,585,425, Cl. 446-327.000.
Colgate-Palmolive Company: *See*—
Karami, Hamzeh, 4,585,447, Cl. 604-385.00A.
Karami, Hamzeh, 4,585,449, Cl. 604-378.000.
College, Neil F.: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,584,757, Cl. 29-564.600.
Colling, Arthur K., Jr., to United Technologies Corporation. High resolution vehicle control system. 4,584,960, Cl. 114-333.000.
Collins Dynamics, Inc.: *See*—
Collins, William J., 4,586,117, Cl. 362-373.000.
Collins, William J., to Collins Dynamics, Inc. Air cooled light. 4,586,117, Cl. 362-373.000.
Collipp, Bruce G., to Shell Oil Company. Pitch period reduction apparatus for tension leg platforms. 4,585,373, Cl. 405-224.000.
Collison & Co.: *See*—
Griffin, Alan, 4,585,211, Cl. 254-10.500.
Comadur SA: *See*—
Juvet, Claude-Michel, 4,584,799, Cl. 51-284.00R.
Cominco Ltd.: *See*—
Bult, Roelof P.; Schroeder, Ted E.; and Needham, James G., 4,585,511, Cl. 156-607.000.
Commercial Shearing, Inc.: *See*—
Easeniyi, Alexander J., 4,585,024, Cl. 137-269.000.
Commissariat a l'Energie Atomique: *See*—
Bruel, Michel; Soubie, Alain; and Spinelli, Philippe, 4,585,945, Cl. 250-492.200.
Casselman, Chantal; Malet, Jean C.; Sophy, Yvon; and Pacton, Roger, 4,584,802, Cl. 52-169.700.
Communications Satellite Corporation: *See*—
Vaidyanathan, Hariharan, 4,585,711, Cl. 429-42.000.
Compagnie Industrielle des Telecommunication CIT-Alcatel: *See*—
Pinsard, Jean-Jacques; and Roger, Jacques, 4,585,303, Cl. 350-96.200.
Comurhex: *See*—
Bachelard, Roland; and Lakodey, Pierre, 4,585,634, Cl. 423-260.000.
Connolly, Paul A., to British Nuclear Fuels Limited. Ventilation systems for glove boxes. 4,584,930, Cl. 98-115.300.
Conseur, Joachim, to Carl Hasse & Wrede GmbH. Torsional vibration balancer. 4,584,901, Cl. 74-574.000.
Control Specialties, Inc.: *See*—
Lohn, Paul, 4,584,871, Cl. 73-40.000.
Cooke, John E. Ski security system. 4,585,252, Cl. 280-820.000.
Cooke, Michael D.; and Ross, Barry C., to Hoechst Aktiengesellschaft. Antibacterial penem derivatives. 4,585,767, Cl. 514-210.000.
Cooley, Stephen E.; and Jensen, Martin J., to Wehr Corporation. Variable air volume system control. 4,585,163, Cl. 236-49.000.
Cooper, Charles E.; and Stitt, Thomas D., to General Electric Company. Third harmonic auxiliary impulse commutation inverter with means for precharging commutation capacitor. 4,585,982, Cl. 318-723.000.
Cooper, Charles E.; and Stitt, Thomas D., to General Electric Company. Electric power inverter with adaptive third harmonic auxiliary impulse commutation. 4,585,983, Cl. 318-723.000.
Cooper, Frank W., Jr.; Andrews, Harry N.; and Randazzo, Matthew J., to Westinghouse Electric Corp. Fiberscope delivery system. 4,586,079, Cl. 358-100.000.
Cooper Industries, Inc.: *See*—
Sabol, Albert, 4,584,770, Cl. 30-267.000.
Coors Porcelain Company: *See*—
Sozio, Ralph B.; and Riley, Edwin J., 4,585,417, Cl. 433-202.100.
Cope, Carroll W., to DG Shelter Corp. Decorative rails and method for assembling same. 4,585,214, Cl. 256-65.000.
Cope, Geoffrey W., to AMSTED Industries Incorporated. Coupler for convertible rail-highway semi-trailer. 4,585,133, Cl. 213-206.000.
Coppola, Patrick S.; and Malone, Paul E., to General Electric Company. Fast opening valve apparatus. 4,585,205, Cl. 251-26.000.
Corbet, Jean-Pierre: *See*—
Arnaud, Michel; and Corbet, Jean-Pierre, 4,585,867, Cl. 546-153.000.
Cordis Corporation: *See*—
Harris, Donald L., 4,585,013, Cl. 128-785.000.
Hershenson, Harold, 4,585,000, Cl. 128-345.000.
Livingston, John H.; and DeCote, Robert, Jr., 4,585,006, Cl. 128-419.0PG.
Cormier, John D. Support apparatus for televisions for use on automobile center arm rests. 4,585,196, Cl. 248-214.000.
Corn, Glenn R.; and Hegedus, Andreas G., to Tegal Corporation. Variable duty cycle, multiple frequency, plasma reactor. 4,585,516, Cl. 156-643.000.
Cornell, David D.: *See*—
Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,585,889, Cl. 560-90.000.
Cornell, Robert W.; Howes, James K.; Koteff, Walter B.; and Rex, Donald K., to International Business Machines Corporation. Method of making an endless forms feed tractor belt. 4,585,606, Cl. 264-156.000.
Cornet, Jean; Lehureau, Jean-Claude; and Magna, Henriette, to Thomson-CSF. Thermo-optic information writing process and information support for implementing this process. 4,586,165, Cl. 365-126.000.
Corrigan, James I.; and Lunova, Casper P., to Budd Company, The. System for measuring and storing data relating to the time durations of steps in a welding operation as well as weld current and gun pressure. 4,585,918, Cl. 219-110.000.
Cota, Albert O.; and Obray, Dean C. Pressurized cable-sheath leak locating instrument. 4,586,142, Cl. 364-507.000.
Couch, Robert P.: *See*—
Rosenbush, David M.; and Couch, Robert P., 4,586,139, Cl. 364-431.020.
Coussau, Jean; and Genton, Hubert, to Framatome & Cie. Device for checking the disconnexion of the control clusters of a nuclear reactor. 4,585,612, Cl. 376-260.000.
Cowsar, Donald R.: *See*—
Beck, Lee R.; Flowers, Charles F., Jr.; Cowsar, Donald R.; and Tanquary, Albert C., 4,585,651, Cl. 424-88.000.
Cox, Robert J.: *See*—
Clecak, Nicholas J.; Cox, Robert J.; Feng, Joseph S.; and Leff, Jerry, 4,585,310, Cl. 350-341.000.
CPC International Inc.: *See*—
Molotsky, Hyman M., 4,585,858, Cl. 536-4.100.
Cramer, Clarence W., to Campbell Soup Company. Method and apparatus for dispensing product upon subjacent objects. 4,585,040, Cl. 141-137.000.
Crandall, Robert E.; and Nickolaus, Roger B., to Rexnord Inc. Belt press frame. 4,584,936, Cl. 100-118.000.
Crawford, James A., to Hughes Aircraft Company. Enhanced analog phase interpolation for Fractional-N frequency synthesis. 4,586,005, Cl. 331-1.00A.
Crawford, Roy P.; and Watrous, Robert B., to International Business Machines Corporation. Dual bellows pump with drive circuit through bellows. 4,585,397, Cl. 417-63.000.
Creusot Loire: *See*—
Mourrier, Francis; and Badaut, Roger, 4,584,927, Cl. 92-71.000.
Croft, Donald W. Barbecue cover support device. 4,584,984, Cl. 126-25.00R.
Crossman, Philip E.; Amstutz, Douglas D.; and Kelemen, Donald D., to Amstore Corporation. Variable decor merchandising system. 4,585,131, Cl. 211-206.000.
Crown Zellerbach Corporation: *See*—
Travis, Claiborne L., 4,585,159, Cl. 229-41.00R.
Crucible Materials Corporation: *See*—
Narasimhan, Kalatur S. V. L.; and Dulis, Edward J., 4,585,473, Cl. 75-0.50C.
Culbertson, Edwin C.: *See*—
Posey, Robert G.; and Culbertson, Edwin C., 4,585,687, Cl. 428-195.000.

Culotta, Anthony J.: *See*—
Culotta, Kenneth W.; and Culotta, Anthony J., 4,584,925, Cl. 89-1.807.

Culotta, Kenneth W.; and Culotta, Anthony J. Underwater rocket launcher and rocket propelled missile. 4,584,925, Cl. 89-1.807.

Curci, Alfred. Bladed rotor system and pitch controls therefor. 4,585,392, Cl. 416-114.000.

Curis, Jimmie L.: *See*—
Petersdorff, George D.; Neilson, Keith J.; and Curis, Jimmie L., 4,584,856, Cl. 70-57.000.

Curnow, Richard D., to Bristol Composite Materials Engineering Ltd. Structural panel. 4,585,683, Cl. 428-71.000.

Currie, Janie K.: *See*—
Desmond, Michael J.; Pesa, Frederick A.; and Currie, Janie K., 4,585,640, Cl. 423-329.000.

Cutler, David N.: *See*—
Butts, H. Bruce, Jr.; Cutler, David N.; Schnorr, Peter C.; and Short, Robert T., 4,586,130, Cl. 364-200.000.

Cutler, Orvid R., Jr.: *See*—
Pasternack, George; Bishop, Timothy E.; and Cutler, Orvid R., Jr., 4,585,534, Cl. 522-31.000.

CVI Incorporated: *See*—
Jensen, Jack E.; Hood, Charles B.; and Parish, Harold C., 4,584,839, Cl. 62-6.000.

Cyclops Corporation: *See*—
Ryan, Thomas G., 4,584,803, Cl. 52-221.000.

Czarno, Yanush E. Air cleaning device. 4,585,599, Cl. 261-2.000.

Czeschka, Franz; Reichenecker, Egon; and Zorn, Reinhard, to ERNI Elektroapparate GmbH. Elastic press-in for the solderless connection of the winding posts of electric connectors or the like with through-connected printed wiring boards. 4,585,293, Cl. 339-221.00R.

D.A.B. Industries, Inc.: *See*—
Pike, Ronald J., 4,585,098, Cl. 188-251.00A.

da Costa, Bernardo: *See*—
Broughton, Roger; and da Costa, Bernardo, 4,585,011, Cl. 128-733.000.

Dahl, Carl U.: *See*—
Knutson, Kjell K. A.; and Dahl, Carl U., 4,585,316, Cl. 350-582.000.

Dahlkamp, Heinz-Leo: *See*—
Thiersch, Friedrich; Strobel, Manfred; and Dahlkamp, Heinz-Leo, 4,585,521, Cl. 202-141.000.

Dahne, Claus: *See*—
Gross, Daniel; and Dahne, Claus, 4,585,349, Cl. 356-375.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Hikosaka, Shinichi; Fujino, Shinya; and Fukaya, Takao, 4,585,553, Cl. 210-107.000.

Daiichi Denshi Kogyo Kabushiki Kaisha: *See*—
Uchida, Kanzaburo, 4,585,366, Cl. 403-21.000.

Daikin Kogyo Co. Ltd.: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; and Ihara, Kiyohiko, 4,585,306, Cl. 350-96.340.

Daikoku, Takahiro: *See*—
Nakayama, Wataru; Daikoku, Takahiro; Nakajima, Tadakatsu; Kuwahara, Heikichi; and Yasukawa, Akira, 4,585,055, Cl. 165-115.000.

Dailey, James E.: *See*—
Regalbuto, John A.; and Dailey, James E., 4,585,374, Cl. 405-227.000.

Daimler-Benz Aktiengesellschaft: *See*—
Weiger, Gunter; Dorrie, Dieter; and Schwerdt, Paul, 4,584,980, Cl. 123-458.000.

Dainippon Ink & Chemicals, Inc.: *See*—
Taguchi, Hiroshi; Nishimura, Tsunehiko; and Kobayashi, Nobuo, 4,585,703, Cl. 428-446.000.

Dainippon Screen Mfg. Co., Ltd.: *See*—
Katayama, Masanori; Yoshio, Miyauchi; and Akira, Okada, 4,585,335, Cl. 355-29.000.

Daiwa Seiko Inc.: *See*—
Atobe, Takashi, 4,585,182, Cl. 242-84.10M.

Dalrymple, John C.: *See*—
Rosener, Harvey J.; Knierim, David L.; and Dalrymple, John C., 4,586,037, Cl. 340-728.000.

Daly, John J., Jr.: *See*—
Bartlett, Philip L.; Daly, John J., Jr.; and Sterling, John D., Jr., 4,585,577, Cl. 252-305.000.

Dammann, Hans; and Kurz, Heinrich. Compound optical phase grating and switching devices comprising such a grating. 4,585,307, Cl. 350-162.220.

Dana-Farber Cancer Institute, Inc.: *See*—
Bernal, Samuel D., 4,585,742, Cl. 436-548.000.

Danfoss A/S: *See*—
Andresen, Erik E.; and Abildtrup, Jorgen, 4,585,208, Cl. 251-96.000.
Iversen, Kristian, 4,585,165, Cl. 237-8.00R.

Daniel, Johannes: *See*—
Katterbach, Helmut; Schroter, Klaus; and Daniel, Johannes, 4,584,747, Cl. 29-121.500.

Danno, Yoshiaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Power transmission mechanism for automotive vehicles. 4,585,101, Cl. 192-3.310.

Darmois, Jean: *See*—
Pathe, Claude; Darmois, Jean; and Nee, Claude, 4,585,713, Cl. 429-112.000.

Darnell, Douglas: *See*—
Sheppard, Lisa K.; and Darnell, Douglas, 4,585,232, Cl. 273-248.000.

Darr, Richard C., to Plastipak Packaging, Inc. In-mold label dispenser for plastic blow molding machine. 4,585,408, Cl. 425-171.000.

Data Electronics, Inc.: *See*—
Olmsted, Dennis R., 4,586,095, Cl. 360-93.000.

Dataproducts, Inc.: *See*—
West, Daniel A.; and Nyi, Lawrence S., 4,585,361, Cl. 400-124.000.

Daubert, Steven J., to AT&T Bell Laboratories. Semiconductor integrated circuit for squaring a signal with suppression of the linear component. 4,585,961, Cl. 307-491.000.

Davenport, William R., Sr.; and Colborn, Wayne T. Safe lock drilling apparatus. 4,585,376, Cl. 408-110.000.

David, John C.: *See*—
Fleischer, Mathew W.; and David, John C., 4,585,074, Cl. 172-194.000.

Davidson, Eldon F. Apparatus and method for use in instrument landing system localizer and glide-slope receivers for deriving course deviation information. 4,586,049, Cl. 343-414.000.

Davis, Ralph; Bellotti, Marc; and Lueders, Arthur, to Baxter Travenol Laboratories, Inc. Peritoneal dialysis apparatus. 4,585,436, Cl. 604-29.000.

Davy McKee (Poole) Limited: *See*—
Rich, Keith E., 4,585,916, Cl. 219-10.61R.

Day, Bobby L., to Brown Boveri Reaktor GmbH. Device for the determination of the vibrations occurring at the internals of a reactor pressure vessel. 4,585,608, Cl. 376-245.000.

De La Rue Giori SA: *See*—
Sauer, Hartmut K., 4,584,942, Cl. 101-415.100.

De la Rue Giori S.A.: *See*—
Giori, Gualtiero, 4,584,939, Cl. 101-152.000.

Debely, Pierre-Etienne: *See*—
Fresnel, Jean-Marie; Debely, Pierre-Etienne; and Waefler, Jean-Pierre, 4,585,618, Cl. 419-12.000.

DeBergalis, Michael; and O'Fee, Robert P., to Du Pont de Nemours, E. I., and Company. Polymer-bound ultraviolet stabilizer coating compositions containing cross linkers. 4,585,693, Cl. 428-324.000.

Decker, Leon J.: *See*—
DeWilde, Mark A.; and Decker, Leon J., 4,586,185, Cl. 372-34.000.

DeCote, Robert, Jr.: *See*—
Livingston, John H.; and DeCote, Robert, Jr., 4,585,006, Cl. 128-419.0PG.

Defago, Raymond; and Sutterlin, Wolfgang, to Ciba-Geigy Corporation. Mixtures of a polyacrylic acid and a copolymer of acrylic acid and acrylamide as thickeners in printing pastes for dyeing and printing fibre material. 4,585,820, Cl. 524-232.000.

De Fockert, Gijsbert, to Machinefabriek C. Rijkaart , B.V. Apparatus for producing a homogenous flexible layer of material from blocks of highly consistent material, such as butter or margarine. 4,584,934, Cl. 99-462.000.

DeGeorge, Martin; Ruell, Hartwig; and Welch, John, to Siemens Corporate Research & Support, Inc. Microphone range finder. 4,586,195, Cl. 381-92.000.

De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., to American Standard Inc. Self-contained sewage waste disposal system. 4,585,562, Cl. 210-805.000.

Degussa Aktiengeselischaft: *See*—
Seebach, Dieter; and Naef, Reto, 4,585,892, Cl. 562-443.000.

Dehennau, Claude, to Solvay & Cie (Societe Anonyme). Multi-layered thermoplastic structures comprising a layer of a vinyl or vinylidene fluoride polymer bonded to a layer of an alpha-olefin polymer. 4,585,694, Cl. 428-355.000.

Dehne, Clarence A., to Jervis B. Webb Company. Conveyor system with automatic load transfer. 4,584,944, Cl. 104-89.000.

Deinhammer, Wolfgang; and Schilling, Bernd, to Wacker-Chemie GmbH. Process for the manufacture of 2-isopropyl-4-methyl-6-hydroxypyrimidine. 4,585,863, Cl. 544-319.000.

Deisz, George A.: *See*—
Tung, William C. T.; and Deisz, George A., 4,585,854, Cl. 528-295.000.

Delhaye, Gerard: *See*—
Tivolle, Alain; Roumegoux, Bernard; Delhaye, Gerard; Codur, Yves; and Mittaine, Bernard, 4,584,746, Cl. 29-81.00B.

Delong, Harold D. Volumetric flow gauge. 4,584,997, Cl. 128-205.230.

De Marco, David A.: *See*—
Fields, Ellis K.; Winzenburg, Mark L.; and De Marco, David A., 4,585,897, Cl. 568-409.000.

DeMario, Edmund E., to Westinghouse Electric Corp. Nuclear fuel spacer grid with improved grid straps. 4,585,615, Cl. 376-442.000.

DeMario, Edmund E.; and Knott, Ronald P., to Westinghouse Electric Corp. Nuclear fuel spacer grid with improved outer straps. 4,585,616, Cl. 376-442.000.

DeMars, Robert. Bashful bear. 4,585,424, Cl. 446-295.000.

Demerson, Christopher A.; and Humber, Leslie G., to American Home Products Corporation. Process for preparing 1,8-diethyl-1,3,4,9-tetrahydropyrano(3,4-b)-indole-1-acetic acid, etodolac. 4,585,877, Cl. 548-432.000.

Demus, Dietrich; Zaschke, Horst; Richter, Sabine; Deutscher, Hans-Joachim; and Wiegeleben, Adelbert, to VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik. Liquid-crystal nematic substances. 4,585,576, Cl. 252-299.620.

DeNiro, Richard G.; Raines, Thomas M.; Raines, Donald B.; and Raines, Joseph B. Device for cleaning teeth and massaging gums. 4,585,416, Cl. 433-140.000.

Deplano, Stefano: *See*—
Bocci, Giorgio; Brizielli, Sando; Triuzzi, Agostino; and Deplano, Stefano, 4,585,411, Cl. 432-11.000.

DeSmet, Gregory L.: *See*—
DeSmet, Vicki M.; and DeSmet, Gregory L., 4,585,676, Cl. 428-5.000.
DeSmet, Vicki M.; and DeSmet, Gregory L. Decorative pull-string bows. 4,585,676, Cl. 428-5.000.
Desmond, Michael J.; Pesa, Frederick A.; and Currie, Janie K., to Standard Oil Company, The. The Synthesis of molecular sieving high silica mordenite using synthesis directing organic dyes. 4,585,640, Cl. 423-329.000.
de Sorgo, Miksa: *See*—
Brown, George L.; de Sorgo, Miksa; and Spencer, Arthur T., 4,585,813, Cl. 523-409.000.
DeSoto, Inc.: *See*—
Pasternack, George; Bishop, Timothy E.; and Cutler, Orvid R., Jr., 4,585,534, Cl. 522-31.000.
Sekmakas, Kazys; and Shah, Raj, 4,585,814, Cl. 523-416.000.
Destree, Xavier P.; and Lazzari, Angelo A. Filiform elements usable for reinforcing moldable materials, particularly concrete. 4,585,487, Cl. 106-99.000.
Deutsche Thomson-Brandt GmbH: *See*—
Rilly, Gerard; Morizot, Gerard; Lopez, Daniel; and Weisser, Erich, 4,586,016, Cl. 336-96.000.
Deutscher, Hans-Joachim: *See*—
Demus, Dietrich; Zaschke, Horst; Richter, Sabine; Deutscher, Hans-Joachim; and Wiegeleben, Adelbert, 4,585,576, Cl. 252-299.620.
Develop Dr. Eisbein GmbH & Co.: *See*—
Moser, Kurt; and Moser, Karl, 4,585,328, Cl. 355-3.0DD.
DeVoe-Holbein International, N.V.: *See*—
DeVoe, Irving W.; and Holbein, Bruce E., 4,585,559, Cl. 210-679.000.
DeVoe, Irving W.; and Holbein, Bruce E., to DeVoe-Holbein International, N.V. Insoluble chelating compositions. 4,585,559, Cl. 210-679.000.
Devoise-Lambert, Andre ; and Gisi, Ulrich, to Sandoz Ltd. Fungicides containing Phosetyl-Al and an oxazolidenylacetamide. 4,585,763, Cl. 514-141.000.
DeWilde, Mark A.; and Decker, Leon J., to United States of America, Army. Passive apparatus for stabilizing a flashlamp-pumped dye laser. 4,586,185, Cl. 372-34.000.
DeWoskin, Dale S., to Burroughs Corporation. Arbitrator circuit and technique for use in a digital computing system having multiple bus controllers. 4,586,128, Cl. 364-200.000.
DG Shelter Corp.: *See*—
Cope, Carroll W., 4,585,214, Cl. 256-65.000.
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Diffracto, Ltd.: *See*—
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Digital Equipment Corporation: *See*—
Butts, H. Bruce, Jr.; Cutler, David N.; Schnorr, Peter C.; and Short, Robert T., 4,586,130, Cl. 364-200.000.
Wu, Andrew L., 4,584,761, Cl. 29-571.000.
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Michel, Peter, 4,585,439, Cl. 604-155.000.
Distin, Robert G., Jr.; and Shaffer, James E., to Advanced Energy Concepts '81, Limited. Epicyclic transmission having free rolling roller driving elements. 4,584,904, Cl. 74-804.000.
Di Trapani, Romano; Pinori, Massimo; and Verdini, Antonio S., to Ente Nazionale Idrocarburi. Partially retro-inverted decapeptide as a specific renin inhibitor with high resistance to enzymatic hydrolysis. 4,585,586, Cl. 260-112.50R.
Dive N' Surf, Inc.: *See*—
Meistrell, William R., 4,585,003, Cl. 128-402.000.
DiVirgilio, Ralph F.: *See*—
Simmons, Thomas E.; Innis, Charles L.; and DiVirgilio, Ralph F., 4,585,236, Cl. 277-38.000.
Divis, Richard T.; and Jones, William R., to Phillips Petroleum Company. Changing oil tubes in a carbon black reactor. 4,585,644, Cl. 423-450.000.
Dluhosch, Kurt; and Meister, Fred, to Fichtel & Sachs AG. Internal combustion engine. 4,584,973, Cl. 123-56.0BA.
Dobbin, Thomas M., to Kaepa, Inc. Shoe tongue holder assembly. 4,584,783, Cl. 36-50.000.
Dobhan, Herbert: *See*—
Horling, Peter; Klupfel, Norbert; Dobhan, Herbert; and Dibal, Volker, 4,584,749, Cl. 29-148.40C.
Dr. Ing. Rudolf Hell GmbH: *See*—
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Doerman, Eryk S., to Molins PLC. Manufacture of cigarettes. 4,584,870, Cl. 73-40.000.
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Dolak, Terence M., to Bristol-Myers Company. Isoindolinyl-alkyl-piperazines. 4,585,773, Cl. 514-253.000.
Dolbeare, Frank A.; and Gray, Joe W., to United States of America, Energy. Flow cytometric measurement of total DNA and incorporated halodeoxyuridine. 4,585,736, Cl. 435-6.000.
Domeier, Linda A., to Union Carbide Corporation. Low shrinkling curable poly(acrylate) molding compositions. 4,585,833, Cl. 525-260.000.
Domeier, Linda A., to Union Carbide Corporation. Curable molding compositions containing a half ester of an organic polyol. 4,585,847, Cl. 526-271.000.
Dominguez, Richard J. G., to Texaco Inc. Flakeglass with sizing, amino, chloro, isocyanate agents coated directly onto the glass in RRIM elastomers. 4,585,850, Cl. 528-122.000.
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Donohue, Paul C., to Du Pont de Nemours, E. I., and Company. Thick film copper compatible resistors based on hexaboride conductors and nonreducible glasses. 4,585,580, Cl. 252-517.000.
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Dorscheimer, Manfred: *See*—
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Dossier, Michael, to Facom. Device for setting the attitude and the measuring height of the body of a vehicle to be checked on a surface plate, elevator, stays or other means without subjecting it to any warping stress. 4,585,092, Cl. 187-8.450.
Doto, Shigeaki, to Nippon Air Brake Co., Ltd. Load responsive brake control valve. 4,585,279, Cl. 303-22.00R.
Dow Chemical Company, The: *See*—
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Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,585,605, Cl. 264-51.000.
Kent, Van A.; Abib, Roberto A.; and Kirby, Larry H., 4,585,630, Cl. 423-234.000.
Lancaster, Gerald M.; Turner, Robert B.; and Booth, Llewellyn D., 4,585,804, Cl. 521-128.000.
Lane, George A.; Rossow, Harold E.; and Teot, Arthur S., 4,585,572, Cl. 252-70.000.
Messing, Sheldon H.; Gibbs, Marylu B.; and Kott, Alan C., 4,585,800, Cl. 521-31.000.
Moore, Michael A., 4,585,915, Cl. 219-10.55E.
Nelson, Donald L.; Matijega, Roney J.; and Miller, Dennis P., deceased, 4,585,803, Cl. 521-105.000.
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Dow Corning Ltd.: *See*—
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Dow Corning S.A.: *See*—
Progneaux, Eric R.; and Trego, Brian R., 4,585,821, Cl. 524-425.000.
Dowa Mining Co., Ltd.: *See*—
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Down River International, Inc.: *See*—
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Downie, John W., to United States of America, Air Force. Sidelobe canceller. 4,586,048, Cl. 343-379.000.
Downing, Terry R., to Allis-Chalmers Corporation. Overhead guard for lift trucks of different lengths. 4,585,268, Cl. 296-102.000.
Dowty Hydraulic Units Limited: *See*—
Harding, John K., 4,585,029, Cl. 137-625.620.
Drake, Maurice D. Combination fluid tank, air/fluid cooler and prime mover/pump mounting system for a hydraulic power unit. 4,585,398, Cl. 417-367.000.
Dresser Industries, Inc.: *See*—
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Duncan, Dennis A.; and Woebeke, Herman, to Stone & Webster Engineering Corp. Method for recovering hydrocarbons from solids. 4,585,543, Cl. 208-11.00R.
Duncan, Dennis A.: *See—*
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Aikens, Paul W., 4,585,288, Cl. 339-75.0MP.
Bartlett, Philip L.; Daly, John J., Jr.; and Sterling, John D., Jr., 4,585,577, Cl. 252-305.000.
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Cole, Paul M., 4,585,434, Cl. 494-20.000.
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Duvall, David S.: *See—*
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Dyer, George R., to United States of America, Energy. DC switching regulated power supply for driving an inductive load. 4,585,986, Cl. 323-271.000.
Dykast, Jaroslav; Cada, Frantisek; and Kubovy, Miroslay, to Vyzkumny ustav bavlnarsky. Apparatus for emergency interruption of fiber supply to a spinning unit of open-end spinning machines. 4,584,833, Cl. 57-405.000.
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Eagle Electric Mfg. Co., Inc.: *See—*
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Easthill, Stephen P., to U.S. Philips Corporation. Temperature control and indicating arrangement. 4,585,926, Cl. 219-506.000.
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Holmes, Russell C., 4,584,895, Cl. 74-476.000.
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Schubart, Rudiger, to Bayer Aktiengesellschaft. Process for the preparation of polyarylene sulphides. 4,585,856, Cl. 528-388.000.
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Eckberg, Richard P., to General Electric Company. Novel dual cure silicone compositions. 4,585,669, Cl. 427-54.100.
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Edson, Gwynne I., to Technic, Inc. Electrolytic reactor. 4,585,539, Cl. 204-228.000.
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Eguchi, Shuji; Taketani, Noriaki; Asano, Hideki; and Wajima, Motoyo, to Hitachi, Ltd. Transparent resin material containing metallic atoms bonded to pendent carboxylic acid groups. 4,585,841, Cl. 526-240.000.
Ehlers, Dennis W., to Paper Converting Machine Co. Apparatus for transverse sealing layers of elongated thermoplastic material. 4,585,508, Cl. 156-494.000.
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Engel, Harold J. Viscous material dispensing machine having programmed positioning. 4,584,964, Cl. 118-697.000.
Engelhardt, Friedrich; Kuhlein, Klaus; Balzer, Juliane; Dursch, Walter; and Kleiner, Hans-Jerg, to Cassella Aktiengesellschaft. Phosphonic acid cross-linked hydrophilic copolymers. 4,585,845, Cl. 526-240.000.
English Electric Valve Company Limited: *See—*
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Erickson, Robert W. Workpiece support apparatus and method. 4,585,217, Cl. 269-56.000.

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Ernest, Michael V., to W. R. Grace & Co. Catalyst composition for ultra high temperature operation. 4,585,752, Cl. 502-314.000.

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Beck, Ernst; Durst, Alfred; Merk, Heinz; Bernhard, Schuler; Wiedenhofer, Kurt; and Wohlgemuth, Werner, 4,584,852, Cl. 66-120.000.

Esanu, Andre , to Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.). 4-chloro-furo-(3,4-c)-pyridine derivatives process for their preparation and therapeutical compositions containing them. 4,585,776, Cl. 514-302.000.

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Esser, Leonard J. M.; Wilting, Hermanus J. H.; and Stikvoort, Eduard F., to U.S. Philips Corporation. DMOS with high-resistivity gate electrode. 4,586,064, Cl. 357-23.400.

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Euler, Reinhold, to Hoechst Aktiengesellschaft. Fixing roller device. 4,585,325, Cl. 355-3.0FU.

Evans, Edwin R.; and Matsumoto, Makoto. Fluorosilicone rubber composition, process and polymer. 4,585,848, Cl. 528-15.000.

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Ewing, Joan R.: *See*—
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Exxon Production Research Co.: *See*—
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Exxon Research & Engineering Company: *See*—
Malghan, Subhaschandra G., 4,585,549, Cl. 209-166.000.

Ezaki, Atsuo; Enomoto, Morio; Kishita, Takehisa; and Takahashi, Kazuo, to Konishiroku Photo Ind. Co., Ltd. Method of preparing silver halide photographic emulsion. 4,585,733, Cl. 430-569.000.

Fabricant, Robert N. Intraocular lens device. 4,585,454, Cl. 623-6.000.

Facom: *See*—
Dossier, Michael, 4,585,092, Cl. 187-8.450.

FAG Kugelfischer Georg Schafer KGaA: *See*—
Schuster, Friedrich; and Paul, Gunther, 4,584,831, Cl. 57-339.000.

Failla, Stephen J.; and Miksza, Anthony S., Jr., to Ethicon, Inc. Surgical instrument for applying two-piece fasteners comprising frictionally held U-shaped staples and receivers (Case III). 4,585,153, Cl. 227-19.000.

Fairchild Semiconductor Corporation: *See*—
Strain, Robert J., 4,585,299, Cl. 350-96.120.

Fannin, Michael L.: *See*—
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,585,906, Cl. 179-18.00B.

Fanuc Ltd: *See*—
Nozawa, Ryoichiro; Kawamura, Hideaki; and Matsuura, Shuji, 4,585,377, Cl. 409-2.000.

Farah, Boshra D.: *See*—
Woo, Jae L.; and Farah, Boshra D., 4,584,875, Cl. 73-160.000.

Farber, Reuben: *See*—
Levy, Moshe; Gassner, Shaul A.; and Farber, Reuben, 4,584,722, Cl. 623-13.000.

Farcasiu, Dan, to Exxon Research and Engineering Co. Composite catalyst for hydrocarbon conversion reactions. 4,585,750, Cl. 502-159.000.

Farcasiu, Malvina: *See*—
Bowes, Emmerson; Farcasiu, Malvina; and Scott, Eric J. Y., 4,585,546, Cl. 208-253.000.

Farina, Alfred J., to Thormocatalytic Corporation. Cylindrical boiler. 4,584,968, Cl. 122-14.000.

Farm DI F.S.a.s.: *See*—
Cellini, Ferdinando, 4,584,911, Cl. 81-3.360.

Farmitalia Carlo Erba S.p.A.: *See*—
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,585,874, Cl. 546-272.000.
Faustini, Franco; Panzeri, Achille; Orzi, Fabrizio; di Salle, Enrico; and Ceserani, Roberto, 4,585,791, Cl. 514-471.000.

Farooque, Mohammad: *See*—
Abens, Sandors G.; Keil, William; and Farooque, Mohammad, 4,585,708, Cl. 429-17.000.

Farrar, David: *See*—
Flesher, Peter; Farrar, David; and Johnson, Ian M., 4,585,843, Cl. 526-63.000.

Faure, Jean L.; and Schoumacher, Marcel, to ASA S.A. Method for producing a fiber-spun yarn. 4,584,830, Cl. 57-328.000.

Faustini, Franco; Panzeri, Achille; Orzi, Fabrizio; di Salle, Enrico; and Ceserani, Roberto, to Farmitalia Carlo Erba, S.p.A. Furyl derivatives of 16-rubstituted prostaglandins. 4,585,791, Cl. 514-471.000.

Fealey, William S.; and Canlas, Prudencio S., to Bostitch Division of Textron Inc. Fastener driving tool with adjustable three-part magazine canister assembly. 4,585,154, Cl. 227-109.000.

Fecker, Rainer: *See*—
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, 4,585,219, Cl. 270-46.000.

Feehan, Charles A. Apparatus for making potato pancakes. 4,584,931, Cl. 99-355.000.

Fellows, Mark W.: *See*—
Stupp, Edward H.; and Fellows, Mark W., 4,585,974, Cl. 313-307.000.

Feng, Joseph S.: *See*—
Clecak, Nicholas J.; Cox, Robert J.; Feng, Joseph S.; and Leff, Jerry, 4,585,310, Cl. 350-341.000.

Fernandez-Garcia, Jorge: *See*—
Lazcano-Navarro, Arturo; Villasenor-Mejia, Antonio; Alcantara, Miguel A.; and Fernandez-Garcia, Jorge, 4,585,476, Cl. 75-59.170.

Ferrari, Pietro: *See*—
Malabarba, Adriano; Cavalleri, Bruno; and Ferrari, Pietro, 4,585,589, Cl. 260-239.30P.

Ferraro, Robert F.: *See*—
Karwowski, Jan; Bangert, James G.; Ferraro, Robert F.; and Brede, Patricia M., 4,585,657, Cl. 426-285.000.

Fichtel & Sachs AG: *See*—
Dluhosch, Kurt; and Meister, Fred, 4,584,973, Cl. 123-56.0BA.
Gobel, Hilmar; and Raab, Harald, 4,585,110, Cl. 192-106.200.

Field, John R., to Allied Colloids Limited. Polymeric dispersions. 4,585,812, Cl. 523-221.000.

Fielding, Alfred W.; Bertram, George T.; Krislav, Semyon; and Askinazi, Joel, to Sealed Air Corporation. Method of packing objects and packing therefor. 4,584,822, Cl. 53-452.000.

Fields, Ellis K.; Winzenburg, Mark L.; and De Marco, David A., to Standard Oil Company (Indiana). Process for preparation of fuel additives from acetylene. 4,585,897, Cl. 568-409.000.

Filter, Harold E.: *See*—
Roberson, Keith; Stevens, Don L.; and Filter, Harold E., 4,585,583, Cl. 252-628.000.

Finch, Ronald L.; Wright, Robert L.; and Ball, Graham C. T., to English Electric Valve Company Limited. Travelling wave or like tubes. 4,585,973, Cl. 315-3.500.

Finter, Jurgen: *See*—
Fischer, Walter; Finter, Jurgen; and Zweifel, Hans, 4,585,876, Cl. 548-423.000.

Firestone Tire & Rubber Company, The: *See*—
Graves, Daniel F., 4,585,826, Cl. 524-534.000.

Firey, Joseph C. Cyclic solid gas reactor. 4,584,970, Cl. 123-23.000.

Fischer, Elmar; Sangl, Reinhard; and Herma, Paul, to Siemens Aktiengesellschaft. Circuit breaker, particularly line-protective circuit breaker. 4,585,912, Cl. 200-144.00R.

Fischer, Robert G., Jr.; and Van Savage, Cynthia A., to American Cyanamid Company. Stripping metals from spent catalysts. 4,585,628, Cl. 423-22.000.

Fischer, Walter; Finter, Jurgen; and Zweifel, Hans, to Ciba-Geigy Corporation. Novel xanthones and thioxanthones. 4,585,876, Cl. 548-423.000.

Fisher, Robert J., to Magna International Inc. Mounting for remotely controlled rear-view mirror. 4,585,200, Cl. 248-487.000.

Fiske, William W., II. Negotiable instrument mailing device. 4,585,160, Cl. 229-92.300.

Fitzer, Erich: *See*—
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.

Flamme, Jean-Marie G. D.: *See*—
Leroy, Andre R.; and Flamme, Jean-Marie G. D., 4,584,734, Cl. 15-250.210.

Fleischer Mfg., Inc.: *See*—
Fleischer, Mathew W.; and David, John C., 4,585,074, Cl. 172-194.000.

Fleischer, Mathew W.; and David, John C., to Fleischer Mfg., Inc. Ridge forming apparatus. 4,585,074, Cl. 172-194.000.

Flesher, Peter; Farrar, David; and Johnson, Ian M., to Allied Colloids, Ltd. Exothermic reactions. 4,585,843, Cl. 526-63.000.

Floreancig, Antoine, to Uranium Pechiney Ugine Kuhlmann. Process for making into useful products the uranium and rare earths contained in impure UF_4 resulting from the extraction of uranium from phosphoric acid. 4,585,626, Cl. 423-2.000.

Flowers, Charles F., Jr.: *See*—
Beck, Lee R.; Flowers, Charles F., Jr.; Cowsar, Donald R.; and Tanquary, Albert C., 4,585,651, Cl. 424-88.000.

Flugan, David C., to Technicare Corporation. Nuclear magnetic resonance eddy field suppression apparatus. 4,585,995, Cl. 324-322.000.

Flurry, Gregory A.: *See*—
Baker, David C.; Bohrer, Kathryn A.; and Flurry, Gregory A., 4,586,035, Cl. 340-712.000.

FMC Corporation: *See*—
Chadwick, George F.; and Kennedy, Lawrence A., 4,585,625, Cl. 423-236.000.
Rathe, Robert A.; and Volkman, Thomas M., 4,585,132, Cl. 212-268.000.
Treves, Gino R.; and Baum, Burton M., 4,585,865, Cl. 546-112.000.

Fogelberg, Mark J., to Borg-Warner Corporation. Transmission anti-clash and anti-rattle brake. 4,584,894, Cl. 74-473.00R.

Foglio, Maurizio: *See*—
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,585,874, Cl. 546-272.000.

Ford Aerospace & Communications Corporation: *See*—
Wagner, Gary L., 4,586,000, Cl. 330-252.000.

Ford Motor Company: *See*—
Bettman, Max, 4,586,018, Cl. 338-42.000.
Pakula, Benjamin J., 4,585,924, Cl. 219-205.000.

Formenti, Giuseppe: *See*—
Carrera, Cesare; and Formenti, Giuseppe, 4,585,044, Cl. 152-165.000.

Formentos, Paul J., to Speakman Company. Fluid flow control in flow line branch. 4,585,175, Cl. 239-553.000.

Forry, John S.; and Himmelberger, Karl B., to Armstrong World Industries, Inc. Acoustically porous building materials. 4,585,685, Cl. 428-143.000.

Forster, Heinz; Hofer, Wolfgang J., deceased (by Hofer, Erika Irene, heir); Schmidt, Robert R.; and Eue, Ludwig, to Bayer Aktiengesellschaft. Novel substituted 5-trifluoromethyl-1,3,4-thiadiazol-2-yl-oxy-acetic acid amide herbicides. 4,585,471, Cl. 71-90.000.

Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Substituted pyridyl-phenyl ethers. 4,585,870, Cl. 546-302.000.

Forster, Martin, to Cerberus AG. Device for selectively determining the components of gas mixtures by means of a gas sensor. 4,584,867, Cl. 73-23.000.

Fosnacht, Donald R., to Inland Steel Company. Method for recycling oily mill scale. 4,585,475, Cl. 75-51.200.

Foster, Clark B.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 4,584,990, Cl. 128-1.00R.

Foster-Miller, Inc.: *See*—
Rubin, Leslie S., 4,585,558, Cl. 210-360.100.

Foster Wheeler Energy Corporation: *See*—
Berman, Irwin, 4,585,155, Cl. 228-107.000.

Fournier, Jean-Paul: *See*—
Roger, Pierre; Choay, Patrick; and Fournier, Jean-Paul, 4,585,769, Cl. 514-212.000.

Fox, Clarence D., to Borg-Warner Corporation. Proportional hydraulic solenoid controller. 4,585,030, Cl. 137-625.640.

Fox, Daniel W.; and Keane, John J., to General Electric Company. Process for preparing polyesters and polyestercarbonates polymers which are adaptable for wire enamels. 4,585,851, Cl. 528-176.000.

Fozard, John R.; and Gittos, Maurice W., to Merrell Dow Pharmaceuticals Inc. Treatment of migraine with substituted tropyl benzoate derivatives. 4,585,866, Cl. 546-129.000.

Framatome & Cie: *See*—
Coussau, Jean; and Genton, Hubert, 4,585,612, Cl. 376-260.000.
Le Rat, Guy, 4,585,609, Cl. 376-245.000.
Styskal, Pierre; Guicherd, Laurent; and Clar, Georges, 4,585,613, Cl. 376-260.000.

France Bed Co. Ltd.: *See*—
Masuda, Teruo; Matsuzaki, Masahiro; and Oshita, Shoji, 4,585,020, Cl. 135-95.000.

Franceschi, Giovanni: *See*—
Alpegiani, Marco; Bedeschi, Angelo; Foglio, Maurizio; Franceschi, Giovanni; and Perrone, Ettore, 4,585,874, Cl. 546-272.000.

Frantz, Earl L., to Carpenter Technology Corporation. High expansion alloy for bimetal strip. 4,585,707, Cl. 428-619.000.

Frantz, Robert H.; Waters, Mark H.; and Reynolds, Charles E., to AMP Incorporated. Overmolded shielded connector. 4,585,292, Cl. 339-143.00R.

Frazier, Thomas G. Static dissipative touch device. 4,586,106, Cl. 361-212.000.

Frechet, Daniel; Nedelec, Lucien; Plassard, Guy; and Brown, Neil L., to Roussel Uclaf. Novel 6-amino-7-hydroxy-4,5,6,7-tetrahydroimidazo[4,5,1-j-k][1]-benzazepin-2-(1H)-one. 4,585,770, Cl. 514-214.000.

Freerk, Abma, to Stork Amsterdam B.V. Apparatus for heat-treating a liquid product. 4,584,932, Cl. 99-455.000.

Fremow, W. Douglas; Whitworth, James R.; and Atwell, Rex R., to Boise Cascade Corporation. Liquid container. 4,585,143, Cl. 220-462.000.

French, Donald E.; and Sekula, John A., to Hughes Aircraft Company. Self-calibration technique for charge-coupled device imagers. 4,585,934, Cl. 250-211.00J.

Frequency and Time Systems, Inc.: *See*—
Emmons, Donald A., 4,586,006, Cl. 331-69.000.

Fresnel, Jean-Marie; Debely, Pierre-Etienne; and Waefler, Jean-Pierre, to ELTECH Systems Corporation. Cermets and their manufacture. 4,585,618, Cl. 419-12.000.

Freudenschuss, Otto: *See*—
Schmidt, Harald; Morell, Josef; Herdin, Gunther; and Freudenschuss, Otto, 4,585,171, Cl. 239-88.000.

Freyria, Jean; and Lantz, Brigitte, to ADIR, S.A.R.L. Method for treating renal insufficiency. 4,585,794, Cl. 514-434.000.

Freysinet International: *See*—
Jartoux, Pierre, 4,585,036, Cl. 138-172.000.

Frick, Roger L., to Rosemount Inc. Circuit for capacitive sensor made of brittle material. 4,586,108, Cl. 361-283.000.

Friesen, David W. Top cover panel for a container. 4,585,267, Cl. 296-100.000.

Frito-Lay, Inc.: *See*—
Plaskett, John, 4,584,818, Cl. 53-374.000.

Frodsham, John S., to BL Technology Limited. Method and apparatus for detecting knock in a spark ignition engine. 4,584,869, Cl. 73-35.000.

Frost, Elton, Jr.; and Evans, Martin T., to Dresser Industries, Inc. Method for generating variable well logging data composites. 4,586,137, Cl. 364-422.000.

Fry, Arnold H. Fire inhibiting tubular safety shield for a cigarette type smoking device and combination thereof. 4,585,014, Cl. 131-175.000.

Fry, Jeremy J., to Rotork Controls Limited. Valve actuators. 4,584,902, Cl. 74-606.00R.

Fuentes, Charles T. Paint roller cover stripper. 4,584,752, Cl. 29-234.000.

Fuji Chemical Co., Ltd.: *See*—
Iio, Tomoyuki; and Mori, Katsuaki, 4,585,105, Cl. 192-70.170.

Fuji Electric Company, Ltd.: *See*—
Miyoshi, Noriomi; Tsuruoka, Michihiko; and Nagumo, Mutsumi, 4,584,883, Cl. 73-861.240.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Komatsu, Hiroshi, 4,585,104, Cl. 192-70.140.

Fuji Photo Film Co., Ltd.: *See*—
Furutachi, Nobuo; and Hirose, Takeshi, 4,585,728, Cl. 430-372.000.
Ikeda, Kensuke; Iwakura, Ken; and Satomura, Masato, 4,585,483, Cl. 106-21.000.
Kawagishi, Toshio; and Furutachi, Nobuo, 4,585,732, Cl. 430-558.000.
Kobayashi, Hidetoshi; and Mihayashi, Keiji, 4,585,731, Cl. 430-543.000.
Sakaguchi, Shinji, 4,585,725, Cl. 430-232.000.
Sugimoto, Tadao; and Yamada, Sumito, 4,585,729, Cl. 430-502.000.
Teraoka, Masanori, 4,585,944, Cl. 250-484.100.

Fuji Xerox Co., Ltd.: *See*—
Miyao, Fumio, 4,586,176, Cl. 370-85.000.

Fujihara, Fumio: *See*—
Tsuji, Yoshihiro; Fujihara, Fumio; and Nishikawa, Yoichi, 4,585,179, Cl. 241-101.700.

Fujikura, Yoshiaki; Takaishi, Naotake; and Inamoto, Yoshiaki, to KAO Corporation. Process for producing 4-homoisotwistane-3-carboxylic acid. 4,585,893, Cl. 562-499.000.

Fujimori, Shinichiro: *See*—
Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, 4,585,591, Cl. 260-397.400.

Fujimori, Toshiyuki: *See*—
Takahara, Yasuyuki; Kubo, Hirofumi; Hosaka, Shigeo; Izuna, Tomomi; and Fujimori, Toshiyuki, 4,586,015, Cl. 336-84.00C.

Fujimura, Akira; and Sato, Yoshinori, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for an internal combustion engine with a three way catalytic converter. 4,584,979, Cl. 123-438.000.

Fujino, Hideo: *See*—
Okamura, Yasushi; Tanaka, Kiichirou; and Fujino, Hideo, 4,586,056, Cl. 346-76.0PH.

Fujino, Shinya: *See*—
Hikosaka, Shinichi; Fujino, Shinya; and Fukaya, Takao, 4,585,553, Cl. 210-107.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Okamoto, Masanori; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,585,789, Cl. 514-461.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,585,860, Cl. 544-22.000.
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,585,762, Cl. 514-129.000.
Teraji, Tsutomu; Sakane, Kazuo; and Gotto, Jiro, 4,585,872, Cl. 548-128.000.

Fujishima, Kazuyasu; Shimotori, Kazuhiro; Ozaki, Hideyuki; and Miyatake, Hideshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,586,167, Cl. 365-189.000.

Fujishima, Kazuyasu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory. 4,586,171, Cl. 365-205.000.

Fujita, Keiichi; Nakauchi, Hiroshi; Kita, Tatsuo; Nakagawa, Yoshiki; and Maeda, Terunobu, to Hazama-Gumi, Ltd. Process for placing cement composition having high strength. 4,585,486, Cl. 106-86.000.

Fujita, Nobuo: *See*—
Kaneko, Tetsuo; and Fujita, Nobuo, 4,585,052, Cl. 165-41.000.
Umeda, Haruhiko; Fujita, Nobuo; Bando, Keiji; Onohara, Kazuyuki; and Fujiwara, Yasuo, 4,585,431, Cl. 474-94.000.

Fujita, Yasushi: *See*—
Ohashi, Shigeo; and Fujita, Yasushi, 4,585,914, Cl. 200-284.000.

Fujitsu Limited: *See*—
Nakatani, Yasutaka; and Kuryu, Isamu, 4,586,072, Cl. 357-34.000.
Yasuda, Hiroshi; and Tsuchikawa, Haruo, 4,585,943, Cl. 250-396.00R.
Yasuda, Hiroshi; Tsuchikawa, Haruo; Kai, Junichi; and Kobayashi, Koichi, 4,586,141, Cl. 364-490.000.

Fujiwara, Akinori: *See*—
Kawaguchi, Teruhiko; Fujiwara, Akinori; and Nishimura, Yuji, 4,585,184, Cl. 242-107.000.

Fujiwara, Yasuo: *See*—
Umeda, Haruhiko; Fujita, Nobuo; Bando, Keiji; Onohara, Kazuyuki; and Fujiwara, Yasuo, 4,585,431, Cl. 474-94.000.

Fukasawa, Noburu: *See*—
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, 4,586,032, Cl. 340-576.000.

Fukaya, Takao: *See*—
Hikosaka, Shinichi; Fujino, Shinya; and Fukaya, Takao, 4,585,553, Cl. 210-107.000.

Fukuchi, Masakazu: *See*—
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; and Ito, Kunio, 4,585,319, Cl. 355-3.00R.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, 4,585,326, Cl. 355-3.0DD.

Fukuda, Masao, to Kabushiki Kaisha Ishida Koki Seisakusho. Method and apparatus for discharging weighing machines in combinatiorial weighing apparatus. 4,585,081, Cl. 177-1.000.

Fukuju, Yukio; and Niiro, Makoto, to Sony Corporation. Method and apparatus for synchronizing playback of tapes recorded in different formats. 4,586,093, Cl. 360-73.000.

Fukumoto, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Piping system surveillance apparatus. 4,586,144, Cl. 364-510.000.

Fuma, Hiroshi: *See*—
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, 4,585,326, Cl. 355-3.0DD.

Funada, Fumiaki: *See*—
Nonomura, Keisaku; Funada, Fumiaki; and Matsuura, Masataka, 4,586,039, Cl. 340-784.000.

Funahashi, Kazutoshi: *See*—
Ogasawara, Makoto; and Funahashi, Kazutoshi, 4,585,695, Cl. 428-364.000.

Funk, Gary L.; and Voelkers, James D., to Phillips Petroleum Company. Feed rate control. 4,586,126, Cl. 364-172.000.

Furuta, Katsuhisa; Nakamura, Yoshinori; and Asaka, Kazuhiko, to Showa Electric Wire & Cable Co., Ltd. Method for controlling an extrusion line for foamed insulation cables involving use of a plurality of generated and measured electrical signals. 4,585,603, Cl. 264-40.600.

Furutachi, Nobuo; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,585,728, Cl. 430-372.000.

Furutachi, Nobuo: *See*—
Kawagishi, Toshio; and Furutachi, Nobuo, 4,585,732, Cl. 430-558.000.

Furuyama, Osamu: *See*—
Tohmata, Eisuke; Takahasshi, Ryoichiro; Sonoda, Sakae; Okamoto, Shoji; and Furuyama, Osamu, 4,585,564, Cl. 252-32.500.

Fuss, Manfred: *See*—
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, 4,585,219, Cl. 270-46.000.

G.D. Societa per Azioni: *See*—
Mattei, Riccardo; and Gamberini, Antonio, 4,584,816, Cl. 53-171.000.
Mattei, Riccardo; Neri, Armando; Gobbi, Santo R.; and Cantello, Maichi, 4,585,919, Cl. 219-121.0LK.

Gaddi, Bruno, to Piaggio & C. S.p.A. Variable-transmission-ratio mechanical drive with V-belt and expansible sheaves. 4,585,430, Cl. 474-12.000.

Gagliani, John; and Long, John V. Polyamide-imide foams and methods of making same. 4,585,805, Cl. 521-129.000.

Gaichime Pty. Limited: *See*—
Pride, Peter, 4,585,124, Cl. 206-559.000.

Gaku, Morio; Kimbara, Hidenori; and Ejiri, Mitsuo, to Mitsubishi Gas Chemical Company, Inc. Process for producing curable resin composition from cyanate ester and maleimide/diamine reaction product. 4,585,855, Cl. 528-322.000.

Gale, Michael T.; Ebnother, Martin; and Schuetz, Helmut, to RCA Corporation. Method for removing glass support from semiconductor device. 4,585,513, Cl. 156-630.000.

Galen, Theodore J., to United States of America, National Aeronautics & Space Administration. Solid sorbent air sampler. 4,584,887, Cl. 73-863.310.

Gall, John C., to Sears, Roebuck and Co. Releasable locking device. 4,585,367, Cl. 403-104.000.

Gallager, Robert G., to Codex Corporation. Source coded modulation system. 4,586,182, Cl. 371-30.000.

Gamberini, Antonio: *See*—
Mattei, Riccardo; and Gamberini, Antonio, 4,584,816, Cl. 53-171.000.

Gambro Lundia AB: *See*—
Gummesson, Bengt-Ake G.; Holmberg, Bengt M.; Jonsson, Sven A.; and Mattisson, Ulf K., 4,585,552, Cl. 210-87.000.

Garber, Hyman, to Lambro Industries, Inc. Dustpan with a control handle. 4,584,735, Cl. 15-257.700.

Gardner, Tommy R.: *See*—
Penny, Glenn S.; Dill, Walter R.; and Gardner, Tommy R., 4,585,065, Cl. 166-308.000.

Garner, James K., Jr.: *See*—
Blizzard, William A.; Garner, James K., Jr.; and Anderson, John D., 4,585,067, Cl. 166-386.000.

Garrett Corporation, The: *See*—
Gazzera, Raymond W., 4,585,172, Cl. 239-265.330.

Garrido, Lorenzo G. Rope socket trays protection against internal and outer fires. 4,585,070, Cl. 169-48.000.

Garthoff, Bernward: *See*—
Ingendoh, Axel; Meyer, Horst; and Garthoff, Bernward, 4,585,873, Cl. 548-130.000.
Junge, Bodo; Goldmann, Siegfried; Thomas, Gunter; and Garthoff, Bernward, 4,585,772, Cl. 514-229.000.

Gartside, Robert J.; Johnson, Axel R.; Ross, Joseph L.; Duncan, Dennis A.; and Bassler, Edwin J., to Stone & Webster Engineering Corporation. Hydrocarbon pretreatment process for catalytic cracking. 4,585,544, Cl. 208-73.000.

Gassner, Shaul A.: *See*—
Levy, Moshe; Gassner, Shaul A.; and Farber, Reuben, 4,584,722, Cl. 623-13.000.

Gaster, Laramie M.; and Orlek, Barry S., to Beecham Group p.l.c. Pentacyclic compounds. 4,585,588, Cl. 260-239.00D.

Gaston, Claire F.; Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., to Steck Manufacturing Company, Inc. Automobile body repair tool. 4,584,863, Cl. 72-477.000.

Gau, Wolfgang: *See*—
Plempel, Manfred; Bucheler, Manfred; Gau, Wolfgang; Regel, Erik; Buchel, Karl H.; and Ploschke, Hans-Jurgen, 4,585,782, Cl. 514-396.000.

Gaudenzi, Gene J.; Norsworthy, John P.; Phan, Nghia V.; and Reedy, Dennis C., to International Business Machines Corporation. Low power off-chip driver circuit. 4,585,953, Cl. 307-270.000.

Gaughen, Thomas P. Seed mat and method and apparatus for manufacturing it. 4,584,790, Cl. 47-56.000.

Gazzera, Raymond W., to Garrett Corporation, The. Hydraulic actuation. 4,585,172, Cl. 239-265.330.

Geboers, Josephus J. A.: *See*—
Otten, Henricus J. M.; Van Dongen, Frederik; and Geboers, Josephus J. A., 4,585,909, Cl. 179-84.0VF.

Gelbein, Abraham P.; and Hansen, Robert, to Chem Systems Inc. Hydrogenation of carboxylic acid compounds to aldehydes using MnO_2 on gamma alumina as catalyst. 4,585,899, Cl. 568-435.000.

Gelbein, Abraham P.: *See*—
Holy, Norman L.; Gelbein, Abraham P.; and Hansen, Robert, 4,585,900, Cl. 568-435.000.

General Electric Company: *See*—
Anthony, Thomas R., 4,585,493, Cl. 148-171.000.
Bose, Bimal K., 4,585,985, Cl. 318-803.000.

Bottomley, Paul A., 4,585,993, Cl. 324-309.000.
Cooper, Charles E.; and Stitt, Thomas D., 4,585,982, Cl. 318-723.000.
Cooper, Charles E.; and Stitt, Thomas D., 4,585,983, Cl. 318-723.000.
Coppola, Patrick S.; and Malone, Paul E., 4,585,205, Cl. 251-26.000.
Eckberg, Richard P., 4,585,669, Cl. 427-54.100.
Erkfritz, Donald S., 4,585,375, Cl. 407-114.000.
Fox, Daniel W.; and Keane, John J., 4,585,851, Cl. 528-176.000.
Koshoffer, John M.; Ekstedt, Edward E.; Samuel, Billy P.; and Stamm, Edward I., 4,584,834, Cl. 60-737.000.
Laskaris, Evangelos T.; and Jones, Donald W., 4,586,017, Cl. 338-32.00S.
Liu, Wan-Li, 4,585,670, Cl. 427-54.100.
Lo, Jhy-Dou R.; and Schlich, William R., 4,585,852, Cl. 528-185.000.
Mayer, John A.; and Miller, William H., 4,585,967, Cl. 310-217.000.
Nourse, John G.; Bourneuf, John J.; and Abbott, David R., 4,585,395, Cl. 416-223.00A.
Parsons, John M.; Smith, Raymond L.; and Wynn, James A., Jr., 4,586,087, Cl. 358-246.000.
Perl, Martin G., 4,585,611, Cl. 376-260.000.
Pirtle, George M.; and Acres, Ronald C., 4,585,390, Cl. 415-160.000.
Sims, Edward M.; and Chandler, Jimmy E., 4,586,038, Cl. 340-729.000.
Skoda, Raymond E., 4,586,161, Cl. 365-122.000.

General Motors Corporation: *See—*
Adams, Frederic R.; Kwasiborski, Stanley, Jr.; and Rimbey, Ronald P., 4,585,261, Cl. 292-216.000.
Belcher, Stephen R., 4,585,157, Cl. 228-180.200.
Lippmann, Raymond; and Chintyan, James R., 4,586,105, Cl. 361-117.000.
Parks, Robert R., 4,585,262, Cl. 296-1.00S.

General Telephone Inc.: *See—*
Mincone, Raymond; Miller, Richard L.; Vella, Louis C.; and Erike, Bosah, 4,585,904, Cl. 179-7.1TP.

Genton, Hubert: *See—*
Coussau, Jean; and Genton, Hubert, 4,585,612, Cl. 376-260.000.

Georgia Tech Research Institute: *See—*
Powers, James C., 4,585,793, Cl. 514-513.000.

Georgopulos, Thomas, to GTE Automatic Electric Inc. Information panel assembly. 4,584,786, Cl. 40-448.000.

Germain, Alain: *See—*
Berteaud, Andre-Jean; Clement, Rene; and Germain, Alain, 4,585,699, Cl. 428-418.000.

Germann, Albrecht J.; Munker, Jurgen F. F.; and Wieland, Erich G., to Koenig & Bauer AG. Inking unit for rotary printing machine. 4,584,940, Cl. 101-350.000.

GfE Gesellschaft fur Elektrometallurgie mbH: *See—*
Andorfer, Hermann, 4,585,474, Cl. 75-10.00V.

Giammarrusco, David P., to GTE Automatic Electric Incorporated. Speech synthesized telephone answering circuit. 4,585,907, Cl. 179-18.00B.

Gibbs, Marylu B.: *See—*
Messing, Sheldon H.; Gibbs, Marylu B.; and Kott, Alan C., 4,585,800, Cl. 521-31.000.

Giddings, Edward H. Vapor compression distillation apparatus. 4,585,523, Cl. 202-236.000.

Giefer, Gunter, to Ciba Vision Care Corporation. Method for disinfecting contact lenses. 4,585,488, Cl. 134-27.000.

Giffin, Brian K., to Giffin Earthworks, Inc. Centering and holding device for use with a potter's wheel apparatus. 4,585,240, Cl. 279-111.000.

Giffin Earthworks, Inc.: *See—*
Giffin, Brian K., 4,585,240, Cl. 279-111.000.

Gilbert, Barrie, to Analog Devices, Incorporated. High-accuracy four-quadrant multiplier which also is capable of four-quadrant division. 4,586,155, Cl. 364-841.000.

Gille, Gunther; Goertler, Horst; Lill, Anton; Prohaska, Hans; Rachner, Horst; and Theurer, Thomas, to ITT Industries, Inc. Windshield wiper control. 4,585,980, Cl. 318-444.000.

Gilley, Richard M.: *See—*
Tice, Thomas R.; Meyers, William E.; Gilley, Richard M.; and Shannon, William M., 4,585,482, Cl. 106-15.050.

Gilliam, John E., to U.S. Philips Corporation. Control signal generator arrangement for semiconductor switches. 4,586,121, Cl. 363-87.000.

Gimelli & Co. AG: *See—*
Hommann, Edgar, 4,585,415, Cl. 433-80.000.

Ginder, Harold B.: *See—*
Hansen, John C.; and Ginder, Harold B., 4,584,845, Cl. 62-201.000.

Giori, Gualtiero, to De la Rue Giori S.A. Combined rotary printing machine. 4,584,939, Cl. 101-152.000.

Gipprich, John W.: *See—*
Hopwood, Francis W.; and Gipprich, John W., 4,586,044, Cl. 343-7.700.

Gisi, Ulrich: *See—*
Devoise-Lambert, Andre ; and Gisi, Ulrich, 4,585,763, Cl. 514-141.000.

Gittos, Maurice W.: *See—*
Fozard, John R.; and Gittos, Maurice W., 4,585,866, Cl. 546-129.000.

Givaudan Corporation: *See—*
Kaiser, Roman; and Lamparsky, Dietmar, 4,585,662, Cl. 426-534.000.

Glanz, Kenneth D., to Appleton Papers Inc. Thermally-responsive record material. 4,586,061, Cl. 346-216.000.

Glass, Henry P.: *See—*
Redmon, C. Peter; Redmon, Samuel C.; and Glass, Henry P., 4,585,283, Cl. 312-250.000.

Glaxo Group Limited: *See—*
Bays, David; Hayes, Roger; and Blatcher, Philip, 4,585,781, Cl. 514-370.000.
Padfield, John M.; and Winterborn, Ian K., 4,585,790, Cl. 514-471.000.

Gobbi, Santo R.: *See—*
Mattei, Riccardo; Neri, Armando; Gobbi, Santo R.; and Cantello, Maichi, 4,585,919, Cl. 219-121.0LK.

Gobel, Hilmar; and Raab, Harald, to Fichtel & Sachs AG. Torsional damper structure for a clutch disc used in a motor-vehicle clutch. 4,585,110, Cl. 192-106.200.

Goddard, Errol D.: *See—*
Kuo, An-Li; Goddard, Errol D.; and Ritscher, James S., 4,585,829, Cl. 524-714.000.

Goertler, Horst: *See—*
Gille, Gunther; Goertler, Horst; Lill, Anton; Prohaska, Hans; Rachner, Horst; and Theurer, Thomas, 4,585,980, Cl. 318-444.000.

Goldberg, Erwin; and Wheat, Thomas E., to Northwestern University. Antigenic peptide compounds. 4,585,587, Cl. 260-112.50R.

Goldmann, Siegfried: *See—*
Junge, Bodo; Goldmann, Siegfried; Thomas, Gunter; and Garthoff, Bernward, 4,585,772, Cl. 514-229.000.

Gomann, Rolf; and Grasse, Hans-Jochen, to Hauni-Werke Korber & Co. KG. Apparatus for transporting and changing the orientation of cigarettes or the like. 4,585,386, Cl. 414-403.000.

Gomberg, Henry J. Obtaining silicon compounds by radiation chemistry. 4,585,646, Cl. 423-648.00R.

Gono, Takeshi: *See—*
Niwa, Takao; Gono, Takeshi; and Osanai, Akinori, 4,584,907, Cl. 74-866.000.

Goodyear Tire & Rubber Company, The: *See—*
Piccoli, Dante E., 4,585,035, Cl. 138-127.000.
Reilly, Patrick J., 4,585,808, Cl. 522-116.000.
Tung, William C. T.; and Deisz, George A., 4,585,854, Cl. 528-295.000.

Gordon, Roy G. Method for continuous coating of glass. 4,585,674, Cl. 427-255.000.

Gorman, Jeremy W. Method of manufacturing a diesel fuel additive to improve cetane rating. 4,585,461, Cl. 44-53.000.

Gorzel, Heribert; and Liess, Wolfgang, to Robert Bosch GmbH. On-off rapidly switchable amplifier circuit with d-c feedback. 4,586,003, Cl. 330-297.000.

Gossain, Devendra M.; and Sachdev, Savinder S., to Spar Aerospace Limited. Self-relocating manipulator. 4,585,388, Cl. 414-735.000.

Goto, Takashi: *See—*
Hirai, Toshio; and Goto, Takashi, 4,585,704, Cl. 428-446.000.

Goto, Yasuyuki: *See—*
Sugimori, Shigeru; Isoyama, Toyoshiro; Goto, Yasuyuki; and Ogawa, Tetsuya, 4,585,575, Cl. 252-299.610.

Gotto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Gotto, Jiro, 4,585,872, Cl. 548-128.000.

Graber Industries, Inc.: *See—*
Ohman, Thor, 4,584,737, Cl. 16-87.40R.

Grable, Donovan B. Mineral and metal particle recovery apparatus and method. 4,585,274, Cl. 299-7.000.

Graham, Andrew S., Jr. System for interconnecting panels. 4,584,806, Cl. 52-285.000.

Graham, John W.; and Sinclair, A. Richard. High strength particulates. 4,585,064, Cl. 166-280.000.

Granzow, Robert H.; Horst, William R.; Hale, William J.; and Saunders, Ralph B., to NCR Corporation. Record member dispensing system. 4,585,144, Cl. 221-7.000.

Grapha-Holding AG: *See—*
Muller, Hans, 4,585,227, Cl. 271-270.000.

Grasman, Ami: *See—*
Burt, Michael; Kent, Eli; and Grasman, Ami, 4,584,800, Cl. 52-63.000.

Grasse, Hans-Jochen: *See—*
Gomann, Rolf; and Grasse, Hans-Jochen, 4,585,386, Cl. 414-403.000.

Grasselli, Robert K.: *See—*
Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., 4,585,617, Cl. 419-5.000.

Grassi, Richard J.: *See—*
Rector, Robert E.; Taylor, Larry T.; Yarberry, Scott H.; and Grassi, Richard J., 4,586,157, Cl. 364-900.000.

Grauel, Ingolf; and Stumpe, Werner, to Robert Bosch GmbH. Brake system for vehicle combinations. 4,585,278, Cl. 303-7.000.

Graves, Daniel F., to Firestone Tire & Rubber Company, The. Natural rubber containing compositions with increased tear strength. 4,585,826, Cl. 524-534.000.

Gray, Joe W.: *See—*
Dolbeare, Frank A.; and Gray, Joe W., 4,585,736, Cl. 435-6.000.

Gray, Kenneth, to Carrier Corporation. Apparatus for assembling tubes in a heat exchanger. 4,584,765, Cl. 29-727.000.

Gray, Kenneth P.; and Greever, James E., to Carrier Corporation. Apparatus for assembling fin plate heat exchangers. 4,584,751, Cl. 29-157.30C.

Gray, R. William, to SCM Corporation. One-touch character correction and replacement system. 4,585,362, Cl. 400-697.100.

Gray, Robert B.: *See—*
Jayne, Michael E.; Anderson, Peter D.; Hoffman, James T.; and Gray, Robert B., 4,584,972, Cl. 123-56.00C.

Green, David A. Boat bumper. 4,584,958, Cl. 114-219.000.

Greenwell, Joseph D., to R. A. Jones & Co. Inc. Apparatus for transferring articles. 4,585,113, Cl. 198-347.000.

Greever, James E.: *See—*
Gray, Kenneth P.; and Greever, James E., 4,584,751, Cl. 29-157.30C.

Gregory, Vernon C. In-mold process for fabrication of molded plastic printed circuit boards. 4,584,767, Cl. 29-848.000.

Gremminger, Gottfried. Surface cleaning apparatus. 4,584,736, Cl. 15-322.000.

Grieves, Colin G.: *See—*
Venardos, Dean G.; and Grieves, Colin G., 4,585,063, Cl. 166-259.000.

Griffin, Alan, to Collison & Co. Method and apparatus for adjusting agricultural cultivator tynes. 4,585,211, Cl. 254-10.500.

Grills, Laurence M.; and Colditz, Eugene F., to Kaiser Aerospace & Electronics Corp. Fluid operated waste tank servicing assembly. 4,584,726, Cl. 4-378.000.

Grimm, Richard C., to Union Carbide Corporation. Purifying trimethylphenol by azeotropic distillation. 4,585,525, Cl. 203-62.000.

Grinneiser, Raymond, to Electronique Guglielmetti V.G. Electronique. Infra-sonic detector, and alarms including same. 4,586,031, Cl. 340-566.000.

Grinnell Fire Protection Systems Company, Inc.: *See—*
Whitaker, George N., 4,585,069, Cl. 169-37.000.

Grinstead, Timothy W.; and Reece, Alan R., to Soil Machine Dynamics Limited. Pipeline plough with lifting assemblies. 4,585,372, Cl. 405-159.000.

Grollimund, Everett C., to Philip Morris Incorporated. Expanded web of sheet material and method of making same. 4,585,016, Cl. 131-361.000.

Gronek, Fred J.; Taradejna, Raymond M.; and Watkins, Ray A., to AT&T Technologies, Inc. Apparatus for inspecting surface mounted components. 4,585,351, Cl. 356-388.000.

Gross, Daniel; and Dahne, Claus, to Battelle Memorial Institute. Method of and apparatus for determining the position of a device relative to a reference. 4,585,349, Cl. 356-375.000.

Gross, Laurence H.; and Noshay, Allen, to Union Carbide Corporation. Olefin polymerization catalysts adapted for gas phase processes. 4,585,840, Cl. 526-159.000.

Grumman Aerospace Corporation: *See—*
Jaffe, Herbert R.; and Mitzelman, Irwin, 4,585,519, Cl. 156-645.000.

Gruppo Lepetit S.p.A.: *See—*
Malabarba, Adriano; Cavalleri, Bruno; and Ferrari, Pietro, 4,585,589, Cl. 260-239.30P.

GTE Automatic Electric Inc.: *See—*
Georgopulos, Thomas, 4,584,786, Cl. 40-448.000.
Giammarrusco, David P., 4,585,907, Cl. 179-18.00B.

GTE Communication Systems Corporation: *See—*
Smith, Louis W., 4,585,908, Cl. 179-81.00C.

GTE Laboratories Incorporated: *See—*
Sigai, A. Gary, 4,585,673, Cl. 427-213.000.

GTE Products Corporation: *See—*
Marcucci, Rudolph V.; and Pai, Robert Y., 4,585,468, Cl. 65-277.000.

Gudmestad, Ragnar; Dusel, Robert O.; and Berres, James, to Artos Engineering Company. Wire feeding, cutting and stripping apparatus having clutch-operated feed and cam-operated cutter/stripper. 4,584,912, Cl. 81-9.510.

Guicherd, Laurent: *See—*
Styskal, Pierre; Guicherd, Laurent; and Clar, Georges, 4,585,613, Cl. 376-260.000.

Guillaume, Gerard; and Guillaume nee Henry, Lola. Artificial hibernator and process for cold preservation of a human being or animal in a predetermined position. 4,584,841, Cl. 62-62.000.

Guillaume nee Henry, Lola: *See—*
Guillaume, Gerard; and Guillaume nee Henry, Lola, 4,584,841, Cl. 62-62.000.

Guillemin, Roger C. L.: *See—*
Brazeau, Paul E., Jr.; Bohlen, Peter; Esch, Frederick S.; Ling, Nicholas C.; and Guillemin, Roger C. L., 4,585,756, Cl. 514-12.000.

Gulf Research & Development Company: *See—*
Beuther, Harold; Kobylinski, Thaddeus P.; Kibby, Charles L.; and Pannell, Richard B., 4,585,798, Cl. 518-715.000.

Gulton Industries, Inc.: *See—*
Rector, Robert E.; Taylor, Larry T.; Yarberry, Scott H.; and Grassi, Richard J., 4,586,157, Cl. 364-900.000.

Gummesson, Bengt-Ake G.; Holmberg, Bengt M.; Jonsson, Sven A.; and Mattisson, Ulf K., to Gambro Lundia AB. System for the measurement of the difference between two fluid flows in separate ducts. 4,585,552, Cl. 210-87.000.

Gupta, Dinesh K.; and Duvall, David S., to United Technologies Corporation. Overlays coating for superalloys. 4,585,481, Cl. 106-14.050.

Gusman, Moisei T.: *See—*
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.

Gussman, Robert L., to Reliability Incorporated. Automated burn-in board unloader and IC package sorter. 4,584,764, Cl. 29-705.000.

Gustav Magenwirth GmbH & Co.: *See—*
Rottenkolber, Ludwig; and Schwab, Manfred, 4,585,094, Cl. 188-24.220.

Gymer, Geoffrey E.; and Richardson, Kenneth, to Pfizer Inc. Triazole antifungal agents. 4,585,778, Cl. 514-326.000.

H. B. Fuller Company: *See—*
Reischle, Ferdinand; Windhoff, Jochen; and Bernig, Walter, 4,585,819, Cl. 524-196.000.

H. B. Fuller GmbH: *See—*
Poppe, Wilfried; and Dorscheimer, Manfred, 4,585,658, Cl. 426-303.000.

H & H Tube & Mfg. Co.: *See—*
Lee, Marlow, 4,585,059, Cl. 165-154.000.

H. Putsch GmbH & Comp.: *See—*
Bittner, Hans-Joachim, 4,584,919, Cl. 83-663.000.

H & S Manufacturing Co., Inc.: *See—*
Steinberg, Richard G., 4,585,266, Cl. 296-100.000.

H. Stoll GmbH & Co.: *See—*
Haltenhof, Hans-Gunter, 4,584,850, Cl. 66-75.100.

Haas, Wolfgang; Muller, Willi; Schacht, Hans; and Scholz, Erich, to Robert Bosch GmbH. Arrangement for cleaning fuel with an electrical water level indicating device. 4,585,022, Cl. 137-172.000.

Habeeb, Jacob J., to Exxon Research and Engineering Co. Removal of halogen from polyhalogenated compounds by electrolysis. 4,585,533, Cl. 204-149.000.

Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Prosthetic sphincter having a diametric occlusion geometry. 4,584,990, Cl. 128-1.00R.

Habley Medical Technology Corporation: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 4,584,990, Cl. 128-1.00R.

Haddad, John G.: *See—*
Clevinger, Brian L.; Haddad, John G.; and Teitelbaum, Steven L., 4,585,741, Cl. 436-542.000.

Hadjiskakis, Constantin; and Monoco, Mario, to Monaco, Mario. Fusing machine. 4,585,510, Cl. 156-555.000.

Hadtke, Frederick B., to Sterling Drug Inc. Hypodermic syringe holder for use with disposal ampoules. 4,585,445, Cl. 604-234.000.

Haendle, Joerg, to Siemens Aktiengesellschaft. Device for taking pictures from a monitor. 4,586,085, Cl. 358-244.000.

Haglof, Ingvar, to Ingenjorsfirman I. Hagloff AB. Extractor for increment borer. 4,584,769, Cl. 30-130.000.

Hahn, Frederick C., to ESCO Corporation. Flight for link chain conveyor. 4,585,117, Cl. 198-731.000.

Haines, Allan D., to National Machinery Co. Apparatus for assembling and forming parts. 4,584,744, Cl. 29-33.00K.

Hakansson, Jan, to Tetra Pak International AB. Arrangement for the application of objects to packing containers. 4,584,819, Cl. 53-410.000.

Hakko Co., Ltd.: *See—*
Morinaga, Akio; Hayashi, Mitsutoshi; and Koga, Motoyuki, 4,584,963, Cl. 118-663.000.

Halbert, Thomas R.: *See—*
Stiefel, Edward I.; Pan, Wie-Hin; and Halbert, Thomas R., 4,585,882, Cl. 556-38.000.

Hale, John M.: *See—*
Wright, Harry D.; Hale, John M.; and Weber, Eugen, 4,585,542, Cl. 204-415.000.

Hale, William J.: *See—*
Granzow, Robert H.; Horst, William R.; Hale, William J.; and Saunders, Ralph B., 4,585,144, Cl. 221-7.000.

Hall, Charles T.; Woodard, Harry L.; Terry, Jimmy C.; Willis, Curtiss O.; and Hendrix, Phil W., to Champion International Corporation. Retainer wrench. 4,584,914, Cl. 81-176.150.

Haller, Belmont L.: *See—*
Tokita, Kenneth M.; and Haller, Belmont L., 4,584,991, Cl. 128-1.100.

Halliburton Company: *See—*
Arnold, Dan M.; and Smith, Harry D., Jr., 4,585,939, Cl. 250-256.000.
Penny, Glenn S.; Dill, Walter R.; and Gardner, Tommy R., 4,585,065, Cl. 166-308.000.
Ruhovets, Naum, 4,584,874, Cl. 73-152.000.

Haltenhof, Hans-Gunter, to H. Stoll GmbH & Co. Flat-bed knitting machine. 4,584,850, Cl. 66-75.100.

Hamabe, Tatsuo: *See—*
Anzai, Kenji; Hamabe, Tatsuo; Watanabe, Ichiro; and Naganuma, Yoshiaki, 4,585,698, Cl. 428-413.000.

Hamada, Haruo: *See—*
Kohashi, Makoto; Miura, Tanetoshi; Okabe, Kaoru; and Hamada, Haruo, 4,586,194, Cl. 381-60.000.

Hamada, Itsuo: *See—*
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, 4,585,605, Cl. 264-51.000.

Hamaguchi, Iwao; and Shibata, Isamu, to Ricoh Company, Ltd. Light deflector. 4,585,297, Cl. 350-6.800.

Hambro Structural Systems Ltd.: *See—*
Haven, Joseph S.; and Blanchard, Gary W., 4,584,815, Cl. 52-327.000.

Hamilton, Richard A. Gas-compressing system. 4,585,039, Cl. 141-47.000.

Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 1,2,4,6-thiatriazine 1,1-dioxide ethers and their use for controlling undesirable plant growth. 4,585,472, Cl. 71-91.000.

Handel, Peter: *See*—
Handel, Peter H.; and Handel, Peter, 4,585,085, Cl. 180-65.200.
Handel, Peter H.; and Handel, Peter. Electric wheel-drive for motor vehicles, in particular for nondestructive hybridization of automobiles. 4,585,085, Cl. 180-65.200.
Hang Tjuk Industrial Co. Ltd.: *See*—
Kwan, Cheng L., 4,585,423, Cl. 446-230.000.
Hannecke, Wolf-Dietrich. Article display stand. 4,585,128, Cl. 211-51.000.
Hansen, Glen D.: *See*—
Buschbom, Floyd E.; Hansen, Glen D.; and Henke, Donald L., 4,585,385, Cl. 414-311.000.
Hansen, Holger, to Autoflug GmbH. Water activated pressurized gas apparatus for rescue applications. 4,585,190, Cl. 244-151.00B.
Hansen, John B.: *See*—
Lassen, Jorgen B.; Christensen, Jorgen A.; Petersen, Erling N.; and Hansen, John B., 4,585,777, Cl. 514-317.000.
Hansen, John C.; and Ginder, Harold B., to Borg-Warner Air Conditioning, Inc. Control system for liquid chilled by an evaporator. 4,584,845, Cl. 62-201.000.
Hansen, Robert: *See*—
Gelbein, Abraham P.; and Hansen, Robert, 4,585,899, Cl. 568-435.000.
Holy, Norman L.; Gelbein, Abraham P.; and Hansen, Robert, 4,585,900, Cl. 568-435.000.
Hanyu, Susumu, to Janome Sewing Machine Co., Ltd. Arrangement of pattern indication in a pattern selecting device of a sewing machine. 4,584,956, Cl. 112-444.000.
Hara, Shozi: *See*—
Inoue, Mamoru; Hasegawa, Morimichi; Hara, Shozi; Imanishi, Kiyokazu; Kubota, Yoshiyuki; and Kitagawa, Haruhiko, 4,584,916, Cl. 82-19.000.
Harada, Haruhisa; Maki, Hiroshi; and Sasaki, Shigeru, to Sumitomo Chemical Company, Limited. Process for the production of an aminophenol. 4,585,896, Cl. 564-403.000.
Harada, Tsutomu: *See*—
Shikano, Hiroshi; and Harada, Tsutomu, 4,585,485, Cl. 106-38.900.
Harcross Engineering (Barnstaple) Ltd.: *See*—
Harding, Peter E.; and Symes, Richard G., 4,584,893, Cl. 74-422.000.
Harding, John K., to Dowty Hydraulic Units Limited. Electrohydraulic servo valve. 4,585,029, Cl. 137-625.620.
Harding, Peter E.; and Symes, Richard G., to Harcross Engineering (Barnstaple) Ltd. Lubrication of rack and pinion apparatus. 4,584,893, Cl. 74-422.000.
Hardwicke Chemical Company: *See*—
Lau, Roland L.; and Hudson, John S., 4,585,898, Cl. 568-433.000.
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Harrington, Richard H.; and Krapf, Charles W. Weight scale utilizing a capacitative load cell. 4,585,082, Cl. 177-210.00C.
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Richard, Herman; Unland, Herman; and Ostmann, Klaus, 4,585,384, Cl. 414-139.000.
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Haylock, John C.; Saunders, Peter R.; Turner, Garland L.; and Twilley, Ian C., to Allied Corporation. Low moisture absorption abrasive bristle of polybutylene terephthalate. 4,585,464, Cl. 51-298.000.
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Hess, Larry, to Chevron Research Company. Acoustically controlled frequency shifted cavity for electromagnetic radiation. 4,586,184, Cl. 372-28.000.
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Hill, Arne. Metal space truss. 4,584,810, Cl. 52-648.000.
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Beer, Henri B.; Van den Keybus, Frans A. M.; Bishara, Jeries I.; Kovatch, William A.; and Hinden, Jean M., 4,585,540, Cl. 204-290.00F.
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Hirt, Manfred; and Arndt, Heinrich, to Zahnraderfabrik Renk A.G. Drive system for twin screw extruder. 4,584,903, Cl. 74-675.000.
Hitachi Chemical Co., Ltd.: *See—*
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Hayashida, Hiroshi; Miyashita, Kunio; Takahashi, Tadashi; Morinaga, Shigeki; and Ishizaki, Kosho, 4,586,152, Cl. 364-718.000.
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Itoh, Hiroyuki; Masaki, Akira; Yamashita, Hiroki; and Hososaka, Satoshi, 4,586,169, Cl. 365-190.000.
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Nagayama, Kazuhiko; Masuda, Masami; and Maeda, Yukio, 4,585,379, Cl. 409-147.000.
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Takahara, Yasuyuki; Kubo, Hirofumi; Hosaka, Shigeo; Izuna, Tomomi; and Fujimori, Toshiyuki, 4,586,015, Cl. 336-84.00C.
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.
Tanabe, Yoshiyuki; Kashiwaya, Mineo; Morita, Kiyomi; and Kameta, Katsunobu, 4,584,981, Cl. 123-472.000.
Tsukiyama, Tokuhiro; Kondo, Yoshie; Kakuse, Katsuharu; Saba, Shinpei; Ozaki, Syoji; and Itoh, Kunihiro, 4,586,027, Cl. 340-347.00DD.
Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,585,573, Cl. 252-70.000.
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Hitzel, Volker; Rackur, Gerhard; and Bickel, Martin, to Hoechst Aktiengesellschaft. Substituted pyrido (1,2-c)imidazo(1,2-a)benzimidazoles, processes for their preparation, their use and pharmaceutical preparations based on these compounds. 4,585,775, Cl. 514-287.000.
Hiyamuta, Shota, to Kubota, Ltd. Sugar cane harvester. 4,584,824, Cl. 56-13.900.
Hobrough, Gilbert L. Serial cross-correlators. 4,586,153, Cl. 364-728.000.
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Euler, Reinhold, 4,585,325, Cl. 355-3.0FU.
Heiss, Lorenz, 4,585,875, Cl. 548-156.000.
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Opitz, Konrad; and Schwaiger, Gunther, 4,585,459, Cl. 8-527.000.

Rieck, Hans-Peter, 4,585,642, Cl. 423-333.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Klioze, Solomon S., 4,585,779, Cl. 514-336.000.
Hofer, Erika Irene, heir: *See*—
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Hofer, Wolfgang J., deceased: *See*—
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Hoffman, David: *See*—
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Hogan, Joseph, to Mac Engineering and Equipment Company, Inc. Weld testing head. 4,584,881, Cl. 73-842.000.
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Hoiss, Jakob. Method and apparatus for distillation of crude water. 4,585,524, Cl. 203-11.000.
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Hollandse Signaalapparaten B.V.: *See*—
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Holmes, Russell C., to Eaton Corporation. Transmission shift control. 4,584,895, Cl. 74-476.000.
Holonyak, Nick, Jr.: *See*—
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Holy, Norman L.; Gelbein, Abraham P.; and Hansen, Robert, to Chem Systems Inc. Hydrogenation of carboxylic acid compounds to aldehydes using Cu/YtO as catalyst. 4,585,900, Cl. 568-435.000.
Homan, Gary R.; and Vincent, Harold L., to Dow Corning Corporation. Silicone pressure-sensitive adhesive process and product with improved lap-shear stability-II. 4,585,836, Cl. 525-477.000.
Hommann, Edgar, to Gimelli & Co. AG. Mouth and tooth spray apparatus. 4,585,415, Cl. 433-80.000.
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Honeyman, Gordon R.; and Owen, James H., II, to Du Pont of Canada, Inc.; and Du Pont de Nemours, E. I., and Company. Stable nitrate/-slurry explosives. 4,585,495, Cl. 149-2.000.
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Hoog, Josef T.; and Mitzel, James W., to Tegal Corporation. Plasma reactor removable insert. 4,585,920, Cl. 219-121.0PR.
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Minjolle, Louis; Drouet, Claudette; Lengronne, Bernard; Hordonneau, Alain; and Capdepuy, Bernard, 4,585,500, Cl. 156-89.000.
Horie, Hiromichi: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.
Horiishi, Nanao: *See*—
Nagai, Norimichi; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, 4,585,568, Cl. 252-62.590.
Horling, Peter; Klupfel, Norbert; Dobhan, Herbert; and Dibal, Volker, to SKF Kugellagerfabriken GmbH. Method for making cages for rolling bearings. 4,584,749, Cl. 29-148.40C.
Hornblower, Marne: *See*—
Meryman, Harold T.; Hornblower, Marne; and Syring, Ralph, 4,585,735, Cl. 435-2.000.
Horst, William R.: *See*—
Granzow, Robert H.; Horst, William R.; Hale, William J.; and Saunders, Ralph B., 4,585,144, Cl. 221-7.000.
Horvath, Carlos F., to Burroughs Corp. Multiple control stores for a pipelined microcontroller. 4,586,127, Cl. 364-200.000.
Hosaka, Shigeo: *See*—
Takahara, Yasuyuki; Kubo, Hirofumi; Hosaka, Shigeo; Izuna, Tomomi; and Fujimori, Toshiyuki, 4,586,015, Cl. 336-84.00C.
Hosaka, Toru: *See*—
Iyama, Kenichi; and Hosaka, Toru, 4,585,940, Cl. 250-336.100.
Hososaka, Satoshi: *See*—
Itoh, Hiroyuki; Masaki, Akira; Yamashita, Hiroki; and Hososaka, Satoshi, 4,586,169, Cl. 365-190.000.
Hossler, Andreas: *See*—
Schwenk, Siegfried; Hossler, Andreas; Heyke, Klaus; and Wallrauch, Alexander, 4,586,075, Cl. 357-74.000.
Houbiers, Joannes P. M., to Oce-Andeno B.V. Optically active derivatives of mercaptoisobutyric acid and methods of preparation thereof. 4,585,595, Cl. 558-255.000.
Hounsel, Mack A.; and Cimochowski, Anthony E., to Manville Corporation. Method and apparatus for fastening an insulation module to a surface. 4,584,814, Cl. 52-747.000.
House Food Industrial Co., Ltd.: *See*—
Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,585,660, Cl. 426-438.000.
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Howe, David J.; and Peters, Paul E., to International Jensen Incorporated. Cleaning disc. 4,586,100, Cl. 360-128.000.
Howes, James K.: *See*—
Cornell, Robert W.; Howes, James K.; Koteff, Walter B.; and Rex, Donald K., 4,585,606, Cl. 264-156.000.
Hoyt, Mark; and Rowe, Edward A., to Ball Corporation. Method and apparatus for video inspection of articles of manufacture. 4,586,080, Cl. 358-106.000.
HR Textron Inc.: *See*—
Boyer, Kent R.; and Cobb, Clyde E., 4,585,216, Cl. 267-150.000.
Huang, Fu-chih; Suh, John T.; and Skiles, Jerry W., to USV Pharmaceutical Corp. Angiotensin-converting enzyme inhibitors. 4,585,758, Cl. 514-19.000.
Hubbard, Charles E.; and Berkemeier, Donald E., to Libbey-Owens-Ford Company. Apparatus for converting a single chambered conduit to a multi-chambered conduit. 4,585,034, Cl. 138-111.000.
Hubner, Heijo, to ESPE Fabrik Pharmazeutischer Praparate GmbH. Process for producing plaster models for use in dentistry. 4,585,667, Cl. 427-2.000.
Hudelmaier, Gerhard, to Hudelmaier, Ingrid. Concrete mixer truck. 4,585,356, Cl. 366-60.000.
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Waitzinger, Franz, 4,585,355, Cl. 366-55.000.
Hudelmaier, Ingrid: *See*—
Hudelmaier, Gerhard, 4,585,356, Cl. 366-60.000.
Hudson, John S.: *See*—
Lau, Roland L.; and Hudson, John S., 4,585,898, Cl. 568-433.000.
Hudson, John T. Method for installing a hanger for a structural member. 4,584,813, Cl. 52-744.000.
Huffy Corporation: *See*—
Diekman, Robert L.; and Dietz, Timothy J., 4,585,246, Cl. 280-281.00R.
Hughes Aircraft Company: *See*—
Crawford, James A., 4,586,005, Cl. 331-1.00A.
French, Donald E.; and Sekula, John A., 4,585,934, Cl. 250-211.00J.
Hughes, John L., to Australian Electro Optics Pty. Limited. Laser beam product marking system. 4,586,053, Cl. 346-1.100.
Humber, Leslie G.: *See*—
Demerson, Christopher A.; and Humber, Leslie G., 4,585,877, Cl. 548-432.000.
Humphrey, Larry L.: *See*—
Inacker, Henry F.; Humphrey, Larry L.; and Staiman, David, 4,586,047, Cl. 343-372.000.
Hunt, William C.: *See*—
Wilkinson, Richard A., Jr.; and Hunt, William C., 4,585,963, Cl. 310-67.00R.
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., to Uniroyal Chemical Company, Inc. Nitro urea based blowing agents. 4,585,802, Cl. 521-92.000.
Hussauf, Walter. Fitting for connecting a plumbing faucet to plumbing pipes. 4,584,723, Cl. 4-192.000.
Hussey, Edwin S. Process for preserving seafood. 4,585,659, Cl. 426-332.000.
Hutchins, Clement, to Lawrence Pump and Engine Company. Device and method for testing for motor bearing wear. 4,584,865, Cl. 73-7.000.
Hutson, James H. Log debarker. 4,585,042, Cl. 144-208.00E.

Hwang, Herbert; and Weitz, Henry, to Weitz, Henry. Artificial plant. 4,585,677, Cl. 428-26.000.
Hydra-Rig Incorporated: *See*—
Lyons, Robert A., Jr.; and Maschek, Johnnie B., Jr., 4,585,061, Cl. 166-77.000.
Hyodo, Hiroshi: *See*—
Uchigaki, Takatoshi; Hyodo, Hiroshi; and Iwase, Teijiro, 4,585,007, Cl. 128-632.000.
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, to Asahi Kasei Kogyo Kabushiki Kaisha. 3-aminoindazole derivatives. 4,585,869, Cl. 546-187.000.
Ichiyanagi, Takashi; and Imanishi, Kiyokazu, to Matsushita Electric Industrial Co., Ltd. Control system for a cam follower and tool. 4,584,915, Cl. 82-19.000.
ICI Americas Inc.: *See*—
Lynch, Matthew J., 4,585,649, Cl. 424-49.000.
Idel, Gerd, to Bergische Achsenfabrik, Fr. Kotz & Sohne. Actuating device for a disc brake. 4,585,095, Cl. 188-71.900.
Idel, Karsten-Josef: *See*—
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Schubart, Rudiger, 4,585,856, Cl. 528-388.000.
Ihara, Kiyohiko: *See*—
Ohmori, Akira; Tomihashi, Nobuyuki; and Ihara, Kiyohiko, 4,585,306, Cl. 350-96.340.
Iijima, Shigeharu: *See*—
Ishiwata, Kazuya; and Iijima, Shigeharu, 4,585,312, Cl. 350-357.000.
Iio, Tomoyuki; and Mori, Katsuaki, to Fuji Chemical Co., Ltd. Multiple disc clutch device and method of manufacture thereof. 4,585,105, Cl. 192-70.170.
Iiyama, Hiroshi: *See*—
Komasaku, Seiichi; Iiyama, Hiroshi; Watanabe, Noboru; and Tanaka, Osamu, 4,584,778, Cl. 33-366.000.
Iizuka, Kiyoshi: *See*—
Tamura, Shuichi; and Iizuka, Kiyoshi, 4,586,029, Cl. 340-540.000.
Ikeda, Kensuke; Iwakura, Ken; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Recording materials. 4,585,483, Cl. 106-21.000.
Ikeda, Noriyasu: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.
Ikegami, Akira: *See*—
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Ikezawa, Harumi: *See*—
Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,585,890, Cl. 560-179.000.
Ikuma, Sadao: *See*—
Uchida, Minoru; and Ikuma, Sadao, 4,585,824, Cl. 524-494.000.
Imai, Masaharu, to Olympus Optical Co., Ltd. Solid state image sensor. 4,586,084, Cl. 358-212.000.
Imanaka, Hiroshi: *See*—
Okamoto, Masanori; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,585,789, Cl. 514-461.000.
Imanishi, Kiyokazu: *See*—
Ichiyanagi, Takashi; and Imanishi, Kiyokazu, 4,584,915, Cl. 82-19.000.
Inoue, Mamoru; Hasegawa, Morimichi; Hara, Shozi; Imanishi, Kiyokazu; Kubota, Yoshiyuki; and Kitagawa, Haruhiko, 4,584,916, Cl. 82-19.000.
Imperial Chemical Industries PLC: *See*—
Bracewell, Philip A.; and Klement, Uri R., 4,586,145, Cl. 364-512.000.
Nelson, Charles R., 4,585,570, Cl. 252-102.000.
Northway, Herbert S.; and Tattam, Norman, 4,585,527, Cl. 204-1.00R.
Powell, Richard L., 4,585,569, Cl. 252-69.000.
Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll device with eccentricity adjusting bearing. 4,585,403, Cl. 418-55.000.
Inaba, Tsutomu: *See*—
Morishita, Etsuo; Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, 4,585,402, Cl. 418-55.000.
Inacker, Henry F.; Humphrey, Larry L.; and Staiman, David, to RCA Corporation. Extended bandwidth switched element phase shifter having reduced phase error over bandwidth. 4,586,047, Cl. 343-372.000.
Inamoto, Yoshiaki: *See*—
Fujikura, Yoshiaki; Takaishi, Naotake; and Inamoto, Yoshiaki, 4,585,893, Cl. 562-499.000.
Inao, Hiroshi: *See*—
Nishida, Mitsuhiro; Yamamoto, Sakuei; and Inao, Hiroshi, 4,585,966, Cl. 310-87.000.
Incom International Inc.: *See*—
Henn, Andrew, 4,584,748, Cl. 29-148.40A.
Inden, Peter: *See*—
Heitkamp, Dieter; and Inden, Peter, 4,585,627, Cl. 423-6.000.
Ingendoh, Axel; Meyer, Horst; and Garthoff, Bernward, to Bayer Aktiengesellschaft. Novel hypotensive imidazothiadiazolealkenecarboxamides. 4,585,873, Cl. 548-130.000.
Ingenjorsfirman I. Hagloff AB: *See*—
Haglof, Ingvar, 4,584,769, Cl. 30-130.000.
Inland Steel Company: *See*—
Fosnacht, Donald R., 4,585,475, Cl. 75-51.200.
Innis, Charles L.: *See*—
Simmons, Thomas E.; Innis, Charles L.; and DiVirgilio, Ralph F., 4,585,236, Cl. 277-38.000.
Innse-Innocenti Santeustacchio S.p.A.: *See*—
Liliano, Bassi, 4,585,114, Cl. 198-570.000.
Inoue, Mamoru; Hasegawa, Morimichi; Hara, Shozi; Imanishi, Kiyokazu; Kubota, Yoshiyuki; and Kitagawa, Haruhiko, to Matsushita Electric Industrial Co., Ltd. Lead face machining apparatus. 4,584,916, Cl. 82-19.000.
Inoue, Masaru, to Hitachi, Ltd. Double beam interferometer using refractive scanning method. 4,585,345, Cl. 356-346.000.
Inoue, Shinya: *See*—
Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, 4,585,591, Cl. 260-397.400.
Institute po Phisikochimia: *See*—
Atanasov, Nikolay A.; Lyutov, Lyudmil G.; Mircheva, Vera V.; and Stefanov, Stefan R., 4,585,531, Cl. 204-49.000.
Instituto Mexicano de Investigaciones Siderurgicas: *See*—
Lazcano-Navarro, Arturo; Villasenor-Mena, Antonio; Alcantara, Miguel A.; and Fernandez-Garcia, Jorge, 4,585,476, Cl. 75-59.170.
Intercontrole Societe Anonyme: *See*—
Momne, Maxime; and Adamowski, Andrzej, 4,585,203, Cl. 248-652.000.
International Business Machines Corporation: *See*—
Baker, David C.; Bohrer, Kathryn A.; and Flurry, Gregory A., 4,586,035, Cl. 340-712.000.
Brandle, Richard T., 4,586,158, Cl. 364-900.000.
Chastang, Jean-Claude A.; Hildenbrand, Walter W.; and Levanoni, Menachem, 4,585,348, Cl. 356-369.000.
Clecak, Nicholas J.; Cox, Robert J.; Feng, Joseph S.; and Leff, Jerry, 4,585,310, Cl. 350-341.000.
Cornell, Robert W.; Howes, James K.; Koteff, Walter B.; and Rex, Donald K., 4,585,606, Cl. 264-156.000.
Crawford, Roy P.; and Watrous, Robert B., 4,585,397, Cl. 417-63.000.
Gaudenzi, Gene J.; Norsworthy, John P.; Phan, Nghia V.; and Reedy, Dennis C., 4,585,953, Cl. 307-270.000.
Jambotkar, Chakrapani G.; and Malaviya, Shashi D., 4,584,763, Cl. 29-578.000.
Klueh, David R.; Livingston, Benjamin F.; Martone, James F.; and Zutt, Martin J., Jr., 4,585,692, Cl. 428-317.900.
Lin, Burn J.; and Taur, Yuan, 4,585,342, Cl. 356-124.000.
Norstedt, Bertil E., 4,586,134, Cl. 364-200.000.
Sincerbox, Glenn T.; Werlich, Harald W.; and Yung, Bwo-Han, 4,585,315, Cl. 350-525.000.
Tiwari, Sandip, 4,586,071, Cl. 357-34.000.
Weinberg, Zeev A.; and Young, Donald R., 4,585,492, Cl. 148-1.500.
Yanker, George M., 4,585,212, Cl. 254-122.000.
International Flavors & Fragrances Inc.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Luccarelli, Domenick, Jr.; Miller, Kevin P.; and Vock, Manfred H., 4,585,663, Cl. 426-535.000.
van Loveren, Augustinus G.; and Sprecker, Mark A., 4,585,582, Cl. 252-522.00R.
International Fuel Cells Corporation: *See*—
Martin, Ronald E.; and Plasse, Paul A., 4,585,532, Cl. 204-129.000.
International Jensen Incorporated: *See*—
Howe, David J.; and Peters, Paul E., 4,586,100, Cl. 360-128.000.
International Standard Electric Corporation: *See*—
Auch, Wilfried; and Schlemper, Eberhard, 4,585,347, Cl. 356-350.000.
Rossberg, Rolf, 4,585,193, Cl. 248-49.000.
Inui, Taiji: *See*—
Sakka, Kenji; Inui, Taiji; Okura, Ryoichi; Kanazawa, Masao; and Takeda, Yasushi, 4,584,837, Cl. 60-646.000.
Ioptex Inc.: *See*—
Blackmore, John M.; and Bittner, Timothy, 4,585,455, Cl. 623-6.000.
Blackmore, John M., 4,585,456, Cl. 623-6.000.
Iosef, Alexander; Bar-on, Menachem; Oren, Jacob; and Kellerman, Dagobert, to Negev Phosphates Ltd. Process for the manufacture of purified phosphoric acid. 4,585,636, Cl. 423-321.00S.
Iqbal, Abul: *See*—
Jost, Max; Iqbal, Abul; and Rochat, Alain C., 4,585,878, Cl. 548-453.000.
Irwin Magnetic Systems, Inc.: *See*—
Chambors, John M.; and Lum, Francis, 4,586,094, Cl. 360-77.000.
Isayama, Takuro: *See*—
Yamazaki, Hiroshi; Isayama, Takuro; Ameyama, Minoru; Matsumoto, Shuzo; and Katano, Yasuo, 4,586,058, Cl. 346-140.00R.
Ishida, Noboru: *See*—
Kawamura, Mitsuyoshi; and Ishida, Noboru, 4,585,396, Cl. 416-241.00B.
Ishida, Toshimasa: *See*—
Nakamura, Hiroshi; Kaminishi, Katsuzo; Nonaka, Toshio; and Ishida, Toshimasa, 4,586,063, Cl. 357-22.000.
Ishii, Shigeru: *See*—
Maeyama, Tsutomu; Kaneko, Kenji; and Ishii, Shigeru, 4,585,648, Cl. 424-49.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Suzuki, Ryushi; Yamaga, Joji; Matsui, Kunio; and Tsuchiya, Hiroaki, 4,585,465, Cl. 55-52.000.

Yoshida, Kazuo; and Umemoto, Tadahiro, 4,585,917, Cl. 219-76.100.

Ishiwata, Kazuya; and Iijima, Shigeharu, to Canon Kabushiki Kaisha. Electrochromic element. 4,585,312, Cl. 350-357.000.

Ishizaki, Kosho: *See*—
Hayashida, Hiroshi; Miyashita, Kunio; Takahashi, Tadashi; Morinaga, Shigeki; and Ishizaki, Kosho, 4,586,152, Cl. 364-718.000.

Isogai, Tokio: *See*—
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, 4,586,143, Cl. 364-509.000.

Isogaya, Kazuyoshi: *See*—
Kitagawa, Nobuhisa; Hirose, Masataka; Isogaya, Kazuyoshi; and Ashida, Yoshinori, 4,585,671, Cl. 427-54.100.

Isoyama, Toyoshiro: *See*—
Sugimori, Shigeru; Isoyama, Toyoshiro; Goto, Yasuyuki; and Ogawa, Tetsuya, 4,585,575, Cl. 252-299.610.

ITALIMPIANTI Societa Italiana Impianti p.a.: *See*—
Bocci, Giorgio; Brizielli, Sando; Triuzzi, Agostino; and Deplano, Stefano, 4,585,411, Cl. 432-11.000.

Ito, Kunio: *See*—
Kishi, Ken-ichi; Sato, Keiji; Kasuya, Takahira; Ito, Kunio; and Wada, Tsuneo, 4,585,723, Cl. 430-106.000.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; and Ito, Kunio, 4,585,319, Cl. 355-3.00R.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, 4,585,326, Cl. 355-3.0DD.

Ito, Mitsuko: *See*—
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, 4,586,143, Cl. 364-509.000.

Ito, Seiichi: *See*—
Miyaji, Kenichi; Toida, Shouji; Ito, Seiichi; and Watanabe, Isao, 4,585,134, Cl. 215-100.00A.

Ito, Shoji: *See*—
Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, 4,585,028, Cl. 137-625.480.

Ito, Yoshito, to Nippon Paint Co., Ltd. Process and apparatus for metering liquid colorant. 4,585,148, Cl. 222-77.000.

Itoh, Hiroyuki; Masaki, Akira; Yamashita, Hiroki; and Hososaka, Satoshi, to Hitachi, Ltd. Semiconductor memory circuit and large scale integrated circuit using the same. 4,586,169, Cl. 365-190.000.

Itoh, Kunihiro: *See*—
Tsukiyama, Tokuhiro; Kondo, Yoshie; Kakuse, Katsuharu; Saba, Shinpei; Ozaki, Syoji; and Itoh, Kunihiro, 4,586,027, Cl. 340-347.0DD.

Itoh, Noboru, to Kawasaki Jukogyo Kabushiki Kaisha. Proportional flow control valve. 4,585,206, Cl. 251-30.020.

Itoh, Yoshizi: *See*—
Ogawa, Shingo; Miyahira, Hitoshi; Sato, Kensaku; Kawamura, Yoshio; Kaida, Hirosi; and Itoh, Yoshizi, 4,584,766, Cl. 29-755.000.

ITT Corporation: *See*—
Sharp, James M., Jr., 4,584,897, Cl. 74-483.0PB.
Sutton, Leonard J., 4,586,119, Cl. 363-17.000.
Tyrrell, Raymond E., 4,586,189, Cl. 375-117.000.

ITT Industries, Inc.: *See*—
Gille, Gunther; Goertler, Horst; Lill, Anton; Prohaska, Hans; Rachner, Horst; and Theurer, Thomas, 4,585,980, Cl. 318-444.000.

Iversen, Kristian, to Danfoss A/S. Means for setting the switching on and off periods of a burner of a hot water heating installation. 4,585,165, Cl. 237-8.00R.

Ivy Medical, Inc.: *See*—
Mannes, Andrew J., 4,585,442, Cl. 604-250.000.

Iwai, Youichi: *See*—
Iwata, Hiroshi; Kashihara, Toshitsugu; Iwai, Youichi; and Yamashita, Nobuo, 4,585,313, Cl. 350-429.000.

Iwakura, Ken: *See*—
Ikeda, Kensuke; Iwakura, Ken; and Satomura, Masato, 4,585,483, Cl. 106-21.000.

Iwamoto, Katsunori: *See*—
Sasaki, Kiyotaka; Tachi, Ryosuke; and Iwamoto, Katsunori, 4,584,978, Cl. 123-417.000.

Iwamoto, Tetsuo: *See*—
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.

Iwanaga, Shoichi: *See*—
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, 4,586,143, Cl. 364-509.000.

Iwase, Teijiro: *See*—
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Iwata, Hiroshi; Kashihara, Toshitsugu; Iwai, Youichi; and Yamashita, Nobuo, to West Electric Company Ltd. Lens drive device and optical lens assembly utilizing the same. 4,585,313, Cl. 350-429.000.

Iwata, Kazuo: *See*—
Haruta, Masahiro; Nakousai, Tadayuki; Iwata, Kazuo; and Nakousai, Keiko, 4,585,484, Cl. 106-22.000.

Iyama, Kenichi; and Hosaka, Toru, to Dowa Mining Co., Ltd. Optical detector. 4,585,940, Cl. 250-336.100.

Izuchi, Shingo; Yamamoto, Toshimasa; and Mori, Shinji, to Kabushiki Kaisha Toka-rika-denki-seisakusho. Webbing retractor. 4,585,186, Cl. 242-107.40D.

Izumo, Kazuyuki: *See*—
Hasegawa, Tadashi; Izumo, Kazuyuki; Enomoto, Katsuyuki; and Sugie, Nobuyoshi, 4,585,686, Cl. 428-172.000.

Izuna, Tomomi: *See*—
Takahara, Yasuyuki; Kubo, Hirofumi; Hosaka, Shigeo; Izuna, Tomomi; and Fujimori, Toshiyuki, 4,586,015, Cl. 336-84.00C.

J. M. Voith GmbH: *See*—
Musselmann, Walter; and Valdiva, Juan, 4,585,551, Cl. 209-379.000.

Jackson, Rodney P., to Emhart Corporation. Cut-clinch mechanism. 4,584,758, Cl. 29-566.300.

Jacob, Joseph; and Lau, John R., to Technology Unlimited Inc. Protective additive to vaginal products and catamenials. 4,585,792, Cl. 514-474.000.

Jacobsen, Robert S.; and Schneider, George W., Jr., to American Meter Company. Apparatus for determining the supercompressibility factor of a flowing gas. 4,584,868, Cl. 73-23.000.

Jacobson, Dwight W. Heavy duty air filter reconditioning system. 4,585,019, Cl. 134-57.00R.

Jaffe, Herbert R.; and Mitzelman, Irwin, to Grumman Aerospace Corporation. Automated chemical milling process. 4,585,519, Cl. 156-645.000.

Jaffe, Max L. Garment bag closure. 4,585,120, Cl. 206-279.000.

Jain, Prem C.: *See*—
Bedard, Charles J.; Jain, Prem C.; and Wood, Samuel F., 4,586,175, Cl. 370-85.000.

Jakob, Karl-Heinz: *See*—
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Jambotkar, Chakrapani G.; and Malaviya, Shashi D., to International Business Machines Corporation. One mask technique for substrate contacting in integrated circuits involving deep dielectric isolation. 4,584,763, Cl. 29-578.000.

James, Bertram G., to Varian Associates, Inc. Double staggered ladder circuit. 4,586,009, Cl. 333-156.000.

Janitschke, Lothar: *See*—
Himmele, Walter; Hoffmann, Werner; and Janitschke, Lothar, 4,585,594, Cl. 260-410.90R.

Janome Sewing Machine Co., Ltd.: *See*—
Hanyu, Susumu, 4,584,956, Cl. 112-444.000.
Sano, Yasuro, 4,584,955, Cl. 112-315.000.

Jansen-Herfeld, Roettger, to Richard Jansen GmbH. Circular saw blade. 4,584,920, Cl. 83-838.000.

Janssen, Wladmir, to Domtar, Inc. Method and apparatus for the determination of non-dissolved gas in liquids. 4,584,866, Cl. 73-19.000.

Jansson, Patricia: *See*—
Tengzelius, Jan; Kvist, Sten-Ake; and Jansson, Patricia, 4,585,480, Cl. 75-255.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
Tosaki, Chikao, 4,584,882, Cl. 73-847.000.

Jarkewicz, Gary G., to Technicare Corporation. Real time cardiac radionuclide imaging. 4,585,008, Cl. 128-654.000.

Jarmyr, Ragnar; and Unnerholm, Leif, to AB Bahco Ventilation. Exhaust device. 4,584,929, Cl. 98-115.100.

Jartoux, Pierre, to Freyssinet International. Distribution elements placed between bindings and the bodies bound thereby. 4,585,036, Cl. 138-172.000.

Jaworski, Eugene: *See*—
Rasmussen, Russell G.; Jaworski, Eugene; and Morrison, Howard J., 4,585,426, Cl. 446-428.000.

Jayne, Michael E.; Anderson, Peter D.; Hoffman, James T.; and Gray, Robert B. Dynamic compression internal combustion engine with yoke having an offset arcuate slot. 4,584,972, Cl. 123-56.00C.

Jayae, William. Robot arm. 4,585,387, Cl. 414-730.000.

Jean, Gilbert; and Jean, Maurice. Apparatus for enhancing the development of microorganisms needed to promote the growth and development of vegetation. 4,584,789, Cl. 47-25.000.

Jean, Maurice: *See*—
Jean, Gilbert; and Jean, Maurice, 4,584,789, Cl. 47-25.000.

Jeco Co., Ltd.: *See*—
Komasaku, Seiichi; Iiyama, Hiroshi; Watanabe, Noboru; and Tanaka, Osamu, 4,584,778, Cl. 33-366.000.

Jeffreys, Lyman W., to AMSTED Industries Incorporated. Mold transfer assembly. 4,585,048, Cl. 164-323.000.

Jenkins, Gorden P.: *See*—
Old, John L.; Jenkins, Gorden P.; and Bullock, Derek J., 4,584,899, Cl. 74-532.000.

Jensen, Jack E.; Hood, Charles B.; and Parish, Harold C., to CVI Incorporated. Multi-stage cryogenic refrigerators. 4,584,839, Cl. 62-6.000.

Jensen, Martin J.: *See*—
Cooley, Stephen E.; and Jensen, Martin J., 4,585,163, Cl. 236-49.000.

Jeol Ltd.: *See*—
Tsuno, Katsushige, 4,585,942, Cl. 250-396.0ML.

Jerome, Denis: *See*—
Bouffard, Serge J. H.; Zuppiroli, Libero; Jerome, Denis; and Bechgaard, Klaus, 4,586,062, Cl. 357-5.000.

Jervis B. Webb Company: *See*—
Dehne, Clarence A., 4,584,944, Cl. 104-89.000.

Jet Research Center Inc.: *See*—
Regalbuto, John A.; and Dailey, James E., 4,585,374, Cl. 405-227.000.

Jochen Plenk K.G.: *See*—
Plenk, Hans-Joachim, 4,585,249, Cl. 280-609.000.
John Fluke Mfg. Co., Inc.: *See*—
Prue, Walter W., Jr.; and Eccleston, Larry E., 4,585,987, Cl. 323-275.000.
Johnson, Axel R.: *See*—
Gartside, Robert J.; Johnson, Axel R.; Ross, Joseph L.; Duncan, Dennis A.; and Bassler, Edwin J., 4,585,544, Cl. 208-73.000.
Johnson, David O.: *See*—
Arntson, Lawrence E., 4,586,192, Cl. 381-24.000.
Johnson, Derek; and Spreadbury, Alan C., to Eli Lilly and Company. Process for producing 9-carbamoyl fluorene derivatives. 4,585,894, Cl. 564-164.000.
Johnson, Ian M.: *See*—
Flesher, Peter; Farrar, David; and Johnson, Ian M., 4,585,843, Cl. 526-63.000.
Johnson, Robert W., Jr.; and Logan, Roger, to Union Camp Corporation. Process for preparing rosin esters of improved color. 4,585,584, Cl. 260-104.000.
Johnson Service Company: *See*—
AbuJudom, David N., II, 4,584,838, Cl. 62-5.000.
Johnson, Timothy W.; and Mueller, Francis X., Jr., to Phillips Petroleum Company. Poly(arylene sulfide) composition molding method and article of manufacture. 4,585,700, Cl. 428-419.000.
Jolidon, Synese; and Meul, Thomas, to Lonza Ltd. Process for the production of optically active 3-aminocarboxylic acid esters. 4,585,887, Cl. 560-38.000.
Jolley, Michael E.: *See*—
Wang, Chao-Huei J.; Stroupe, Stephen D.; and Jolley, Michael E., 4,585,862, Cl. 544-319.000.
Jones, Allen R.: *See*—
McMullen, Warren H.; Chessin, Hyman; and Jones, Allen R., 4,585,530, Cl. 204-34.000.
Jones, Charles R.: *See*—
Thomas, Virgil E.; and Jones, Charles R., 4,586,159, Cl. 364-900.000.
Jones, Donald W.: *See*—
Laskaris, Evangelos T.; and Jones, Donald W., 4,586,017, Cl. 338-32.00S.
Jones-Hinton, James, to Dunlop Limited. Lining of tubular structures. 4,585,371, Cl. 405-153.000.
Jones, William R.: *See*—
Divis, Richard T.; and Jones, William R., 4,585,644, Cl. 423-450.000.
Jonkers, Godefridus H. J., to Wiva Verpakkingen B.V. Container with locking cover. 4,585,138, Cl. 220-67.000.
Jonsson, Sven A.: *See*—
Gummesson, Bengt-Ake G.; Holmberg, Bengt M.; Jonsson, Sven A.; and Mattisson, Ulf K., 4,585,552, Cl. 210-87.000.
Jost, Max; Iqbal, Abul; and Rochat, Alain C., to Ciba-Geigy Corporation. N-substituted 1,4-diketopyrrolo-[3,4-c]-pyrroles. 4,585,878, Cl. 548-453.000.
Joy Manufacturing Company: *See*—
Shelton, William S., 4,585,207, Cl. 251-62.000.
Jung, Eggert; and Wadle, Heinrich, to Dr. Ing. Rudolf Hell GmbH. Run-free color raster for multi-color printing. 4,585,309, Cl. 350-322.000.
Jung, Karl A.; Jakob, Karl-Heinz; Munzer, Manfred; and Wopker, Wilhelm, to Rohm GmbH. Flame retardant polymethyl methacrylate molding compound. 4,585,818, Cl. 524-120.000.
Junge, Bodo; Goldmann, Siegfried; Thomas, Gunter; and Garthoff, Bernward, to Bayer Aktiengesellschaft. Agents for combating circulatory illnesses and their use. 4,585,772, Cl. 514-229.000.
Jungersen, Anders. Horseshoe. 4,585,068, Cl. 168-11.000.
Jutkevich, Valery I.: *See*—
Alexandrov, Vladimir M.; Rabinov, Anatoly I.; Shalyapin, Mikhail I.; and Jutkevich, Valery I., 4,585,078, Cl. 173-93.500.
Juvet, Claude-Michel, to Comadur SA. Method of forming a convergent lens in a plate of transparent mineral material. 4,584,799, Cl. 51-284.00R.
Kabe, Kazuyuki: *See*—
Morikawa, Tuneo; and Kabe, Kazuyuki, 4,585,045, Cl. 152-536.000.
Kabushiki Kaisha ASK Kenkyusho: *See*—
Kunito, Mitsuhiro, 4,585,678, Cl. 428-33.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Asada, Masaaki, 4,585,428, Cl. 464-68.000.
Mori, Mitsuyoshi, 4,584,891, Cl. 74-331.000.
Nishi, Tetsuro, 4,584,835, Cl. 60-330.000.
Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Fukuda, Masao, 4,585,081, Cl. 177-1.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Arai, Hiroyuki, 4,585,910, Cl. 191-90.000.
Umeda, Haruhiko; Fujita, Nobuo; Bando, Keiji; Onohara, Kazuyuki; and Fujiwara, Yasuo, 4,585,431, Cl. 474-94.000.
Kabushiki Kaisha Komatsu Sesiakusho: *See*—
Kaneko, Tetsuo; and Fujita, Nobuo, 4,585,052, Cl. 165-41.000.
Kabushiki Kaisha Kyoto Daiichi Kagaku: *See*—
Uchigaki, Takatoshi; Hyodo, Hiroshi; and Iwase, Teijiro, 4,585,007, Cl. 128-632.000.
Kabushiki Kaisha Meidensha: *See*—
Yonahara, Kunio; Miyagawa, Hiroshi; and Aimoto, Shingo, 4,585,578, Cl. 252-511.000.
Kabushiki Kaisha Nipponcoinco: *See*—
Mori, Yoshikazu; Kojima, Susumu; and Watabe, Masayuki, 4,585,125, Cl. 209-534.000.
Kabushiki Kaisha Toka-rika-denki-seisakusho: *See*—
Izuchi, Shingo; Yamamoto, Toshimasa; and Mori, Shinji, 4,585,186, Cl. 242-107.40D.
Kawaguchi, Teruhiko; Fujiwara, Akinori; and Nishimura, Yuji, 4,585,184, Cl. 242-107.000.
Kabushiki Kaisha Toshiba: *See*—
Hiraki, Shun-ichi; Tsuru, Kazuo; Usuki, Yoshikazu; and Koshino, Yutaka, 4,585,489, Cl. 148-1.500.
Kato, Hirohisa; Oguchi, Toshihiko; and Doki, Yuji, 4,585,697, Cl. 428-403.000.
Kohsaka, Yoshio, 4,584,732, Cl. 8-159.000.
Koizumi, Misao; and Murase, Satoru, 4,586,012, Cl. 335-216.000.
Matsunaga, Hideki; Hirate, Naoyuki; and Okada, Akira, 4,584,886, Cl. 73-863.000.
Ohtake, Yasuhisa, 4,585,518, Cl. 156-644.000.
Ozu, Masao; and Monden, Tsuneo, 4,584,750, Cl. 29-156.40R.
Tanaka, Kuniyoshi, 4,585,969, Cl. 310-328.000.
Toshimitsu, Kenshi; Sukegawa, Tetsuya; and Takano, Toshimasa, 4,585,321, Cl. 355-3.0CH.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kimbara, Masahiko, 4,585,037, Cl. 139-1.00E.
Kadota, Takao; Hashimoto, Masayuki; and Hamada, Itsuo, to Dow Chemical Company. Rigid thermoplastic resin foam and process for preparation thereof. 4,585,605, Cl. 264-51.000.
Kaepa, Inc.: *See*—
Dobbin, Thomas M., 4,584,783, Cl. 36-50.000.
Kahn, Sherwin R.: *See*—
Duncan, Hibbert A.; Ehret, Francis J.; Kahn, Sherwin R.; Kinney, Karen H.; and Parry, Peter D., 4,585,931, Cl. 235-464.000.
Kai, Junichi: *See*—
Yasuda, Hiroshi; Tsuchikawa, Haruo; Kai, Junichi; and Kobayashi, Koichi, 4,586,141, Cl. 364-490.000.
Kaida, Hirosi: *See*—
Ogawa, Shingo; Miyahira, Hitoshi; Sato, Kensaku; Kawamura, Yoshio; Kaida, Hirosi; and Itoh, Yoshizi, 4,584,766, Cl. 29-755.000.
Kaiser Aerospace & Electronics Corp.: *See*—
Grills, Laurence M.; and Colditz, Eugene F., 4,584,726, Cl. 4-378.000.
Kaiser Aluminium Europe Inc.: *See*—
Bachmann, Helmut, 4,585,538, Cl. 204-225.000.
Kaiser, Roman; and Lamparsky, Dietmar, to Givaudan Corporation. Acyclic alcohol odorant and/or flavoring substances. 4,585,662, Cl. 426-534.000.
Kakuse, Katsuharu: *See*—
Tsukiyama, Tokuhiro; Kondo, Yoshie; Kakuse, Katsuharu; Saba, Shinpei; Ozaki, Syoji; and Itoh, Kunihiro, 4,586,027, Cl. 340-347.0DD.
Kaladas, Jeffrey J.: *See*—
Schulz, Donald N.; and Kaladas, Jeffrey J., 4,585,846, Cl. 526-264.000.
Kalb, Irvin M. Inflatable intraocular lens. 4,585,457, Cl. 623-6.000.
Kalhas Oracle, Inc.: *See*—
Panaoussis, Spyro, 4,586,091, Cl. 360-40.000.
Kamada, Hiroshi: *See*—
Nishibori, Toshiki; Kita, Sumio; and Kamada, Hiroshi, 4,585,222, Cl. 271-106.000.
Kameta, Katsunobu: *See*—
Tanabe, Yoshiyuki; Kashiwaya, Mineo; Morita, Kiyomi; and Kameta, Katsunobu, 4,584,981, Cl. 123-472.000.
Kaminishi, Katsuzo: *See*—
Nakamura, Hiroshi; Kaminishi, Katsuzo; Nonaka, Toshio; and Ishida, Toshimasa, 4,586,063, Cl. 357-22.000.
Kamiya, Maki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,584,922, Cl. 84-1.010.
Kamohara, Hisato; Aisaka, Tatsuyoshi; and Kawai, Mituo, to Tokyo Shibaura Denki Kabushiki Kaisha. Wear-resistant alloy for an atomic power plant. 4,585,620, Cl. 420-442.000.
Kanazawa, Masao: *See*—
Sakka, Kenji; Inui, Taiji; Okura, Ryoichi; Kanazawa, Masao; and Takeda, Yasushi, 4,584,837, Cl. 60-646.000.
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Method for producing a metal lithographic plate. 4,585,529, Cl. 204-27.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakayama, Takehisa; Nishimura, Kunio; Tsuge, Kazunori; and Tawada, Yoshihisa, 4,585,537, Cl. 204-192.00D.
Kaneko, Kenji: *See*—
Maeyama, Tsutomu; Kaneko, Kenji; and Ishii, Shigeru, 4,585,648, Cl. 424-49.000.
Kaneko, Tetsuo; and Fujita, Nobuo, to Kabushiki Kaisha Komatsu Sesiakusho. Tank apparatus for holding a reserve supply of coolant for a radiator on a vehicle. 4,585,052, Cl. 165-41.000.
Kaneyasu, Akira: *See*—
Yamamoto, Kosei; and Kaneyasu, Akira, 4,585,743, Cl. 501-108.000.
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, to Hitachi, Ltd. Gas detecting apparatus. 4,586,143, Cl. 364-509.000.
Kano, Atsushi: *See*—
Koyama, Shigeo; Kozuka, Nobuhiko; and Kano, Atsushi, 4,585,324, Cl. 355-3.00R.
KAO Corporation: *See*—
Fujikura, Yoshiaki; Takaishi, Naotake; and Inamoto, Yoshiaki, 4,585,893, Cl. 562-499.000.

Karabedian, James A., to Owens-Illinois, Inc. Coextruded multilayer sheet and tough sleeve label made therefrom. 4,585,679, Cl. 428-35.000.

Karami, Hamzeh, to Colgate-Palmolive Company. Disposable diaper with intersecting stressed crotch and waist seals. 4,585,447, Cl. 604-385.00A.

Karami, Hamzeh, to Colgate-Palmolive Co. Disposable diaper with improved top sheet. 4,585,449, Cl. 604-378.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Reinhard, 4,584,738, Cl. 16-238.000.

Karn, Donald L., to Monarch Marking Systems, Inc. Print head. 4,584,938, Cl. 101-111.000.

Karwowski, Jan; Bangert, James G.; Ferraro, Robert F.; and Brede, Patricia M., to Nabisco Brands, Inc. Agglomerated flavor bits. 4,585,657, Cl. 426-285.000.

Kasboske, George C. Vehicle headlamp with yellow and main light transmission. 4,586,116, Cl. 362-293.000.

Kashihara, Toshitsugu: *See*—
Iwata, Hiroshi; Kashihara, Toshitsugu; Iwai, Youichi; and Yamashita, Nobuo, 4,585,313, Cl. 350-429.000.

Kashiwaya, Mineo: *See*—
Tanabe, Yoshiyuki; Kashiwaya, Mineo; Morita, Kiyomi; and Kameta, Katsunobu, 4,584,981, Cl. 123-472.000.

Kasuya, Takahira: *See*—
Kishi, Ken-ichi; Sato, Keiji; Kasuya, Takahira; Ito, Kunio; and Wada, Tsuneo, 4,585,723, Cl. 430-106.000.

Katagiri, Yasuo: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Katano, Yasuo: *See*—
Yamazaki, Hiroshi; Isayama, Takuro; Ameyama, Minoru; Matsumoto, Shuzo; and Katano, Yasuo, 4,586,058, Cl. 346-140.00R.

Katayama, Masanori; Yoshio, Miyauchi; and Akira, Okada, to Dainippon Screen Mfg. Co., Ltd. Automatic process camera. 4,585,335, Cl. 355-29.000.

Kato, Hirohisa; Oguchi, Toshihiko; and Doki, Yuji, to Kabushiki Kaisha Toshiba. Magnetic recording medium. 4,585,697, Cl. 428-403.000.

Kato, Manabu: *See*—
Aoyama, Shunichi; and Kato, Manabu, 4,584,974, Cl. 123-90.160.

Katsuno, Yasunobu, to Tamagawa Seigi Kabushiki Kaisha. Gas-rate sensor. 4,584,878, Cl. 73-497.000.

Katterbach, Helmut; Schroter, Klaus; and Daniel, Johannes, to Helmut Katterbach. Ironing/mangle roller. 4,584,747, Cl. 29-121.500.

Kaufman, Jay S.; and Kissinger, John A., to United States of America, Energy. Heat exchanger for reactor core and the like. 4,585,053, Cl. 165-74.000.

Kaufman, Jerry M., to Hemedix International, Inc. Catheter locating device. 4,585,443, Cl. 604-174.000.

Kaul, Pradman, to M/A-COM DCC, Inc. Integrated narrowband and wideband TDMA networks. 4,586,177, Cl. 370-104.000.

Kawabata, Kohji: *See*—
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,585,860, Cl. 544-22.000.

Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Motor-driven proportional fluid flow control valve. 4,585,028, Cl. 137-625.480.

Kawada, Junji: *See*—
Koike, Kazuo; and Kawada, Junji, 4,586,097, Cl. 360-99.000.

Kawagishi, Toshio; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,585,732, Cl. 430-558.000.

Kawaguchi, Akio: *See*—
Hiraiwa, Kazuyoshi; and Kawaguchi, Akio, 4,584,892, Cl. 74-339.000.

Kawaguchi, Teruhiko; Fujiwara, Akinori; and Nishimura, Yuji, to Kabushiki Kaisha Toka-rika-denki-seisakusho. Webbing tension device. 4,585,184, Cl. 242-107.000.

Kawahara, Akira; and Chiba, Akihiko, to Ryusyo Industrial Co., Ltd. Clasping device. 4,584,741, Cl. 24-68.0CD.

Kawai, Hiroshi; and Ootsuka, Yukio, to Toyota Jidosha Kabushiki Kaisha. Apparatus for cooling molten metal in a mold. 4,585,047, Cl. 164-126.000.

Kawai, Mituo: *See*—
Kamohara, Hisato; Aisaka, Tatsuyoshi; and Kawai, Mituo, 4,585,620, Cl. 420-442.000.

Kawakami, Hidehiko: *See*—
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.

Kawakubo, Hiromu: *See*—
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, 4,585,869, Cl. 546-187.000.

Kawamura, Hideaki: *See*—
Nozawa, Ryoichiro; Kawamura, Hideaki; and Matsuura, Shuji, 4,585,377, Cl. 409-2.000.

Kawamura, Mitsuyoshi; and Ishida, Noboru, to NGK Spark Plug Co., Ltd. Turbine shaft. 4,585,396, Cl. 416-241.00B.

Kawamura, Takao; and Sugimura, Akihiko, to Kyocera Corporation. Liquid crystal device having interdigitated electrodes. 4,585,311, Cl. 350-347.00V.

Kawamura, Yoshio: *See*—
Ogawa, Shingo; Miyahira, Hitoshi; Sato, Kensaku; Kawamura, Yoshio; Kaida, Hirosi; and Itoh, Yoshizi, 4,584,766, Cl. 29-755.000.

Kawanishi, Hidekata: *See*—
Naruo, Noboru; and Kawanishi, Hidekata, 4,586,020, Cl. 338-238.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Itoh, Noboru, 4,585,206, Cl. 251-30.020.

Kawasaki, Kazuaki: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Kay, Albert E. Toy construction kit. 4,585,422, Cl. 446-106.000.

Keane, John J.: *See*—
Fox, Daniel W.; and Keane, John J., 4,585,851, Cl. 528-176.000.

Keckeisen, Adelinde: *See*—
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,585,761, Cl. 514-43.000.

Keeter, James W.: *See*—
Parker, Lawrence A.; Keeter, James W.; and Robles, Arturo C., 4,585,204, Cl. 249-28.000.

Keil, William: *See*—
Abens, Sandors G.; Keil, William; and Farooque, Mohammad, 4,585,708, Cl. 429-17.000.

Kelemen, Donald D.: *See*—
Crossman, Philip E.; Amstutz, Douglas D.; and Kelemen, Donald D., 4,585,131, Cl. 211-206.000.

Kellerman, Dagobert: *See*—
Iosef, Alexander; Bar-on, Menachem; Oren, Jacob; and Kellerman, Dagobert, 4,585,636, Cl. 423-321.00S.

Kelsey-Hayes Company: *See*—
Linkner, Herbert L., Jr., 4,586,013, Cl. 335-276.000.

Kempf, Joseph. Dialysis needle. 4,585,446, Cl. 604-274.000.

Kennedy, Lawrence A.: *See*—
Chadwick, George F.; and Kennedy, Lawrence A., 4,585,625, Cl. 423-236.000.

Kent, Eli: *See*—
Burt, Michael; Kent, Eli; and Grasman, Ami, 4,584,800, Cl. 52-63.000.

Kent, Van A.; Abib, Roberto A.; and Kirby, Larry H., to Dow Chemical Company, The. Process for selectively removing hydrogen sulfide. 4,585,630, Cl. 423-234.000.

Kernforschungsanlage Julich GmbH: *See*—
Heitkamp, Dieter; and Inden, Peter, 4,585,627, Cl. 423-6.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.

Keulemans, Cornelis N. M.; and Smits, Gerard, to Lever Brothers Company. Interesterification process and apparatus. 4,585,593, Cl. 260-410.700.

Key Pharmaceuticals, Inc.: *See*—
Sablotsky, Steven, 4,585,452, Cl. 604-896.000.

Kholin, Boris G. Method for dividing bulk liquid into drops. 4,585,167, Cl. 239-4.000.

Kibby, Charles L.: *See*—
Beuther, Harold; Kobylinski, Thaddeus P.; Kibby, Charles L.; and Pannell, Richard B., 4,585,798, Cl. 518-715.000.

Kidera, Kenji; Nakagawa, Shigeru; Takeda, Takashi; Omori, Katsumi; and Okuma, Toshiyuki. Frost damage proofed pile. 4,585,681, Cl. 428-36.000.

Kieslich, Walter: *See*—
Nitsch, Wilhelm; Kieslich, Walter; and Treiber, Helmut, 4,585,338, Cl. 355-56.000.

Kimbara, Hidenori: *See*—
Gaku, Morio; Kimbara, Hidenori; and Ejiri, Mitsuo, 4,585,855, Cl. 528-322.000.

Kimbara, Masahiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of regulating warp yarn tension in a weaving machine. 4,585,037, Cl. 139-1.00E.

Kimberly-Clark Corporation: *See*—
Enloe, Kenneth M., 4,585,448, Cl. 604-378.000.
Rosch, Paulette M.; and Kopacz, Thomas J., 4,585,450, Cl. 604-390.000.

Kimura, Hiroyuki: *See*—
Nishioka, Kimihiko; and Kimura, Hiroyuki, 4,584,988, Cl. 128-6.000.

Kimura, Kiyoshi: *See*—
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; and Ito, Kunio, 4,585,319, Cl. 355-3.00R.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, 4,585,326, Cl. 355-3.0DD.

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King, Herbert R., to Milliken Research Corporation. Air comb arrangement for jet dyeing machine. 4,584,854, Cl. 68-205.00R.
Kinney, Karen H.: *See*—
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Kaufman, Jay S.; and Kissinger, John A., 4,585,053, Cl. 165-74.000.
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Engelhardt, Friedrich; Kuhlein, Klaus; Balzer, Juliane; Dursch, Walter; and Kleiner, Hans-Jerg, 4,585,845, Cl. 526-240.000.
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Klement, Uri R.: *See*—
Bracewell, Philip A.; and Klement, Uri R., 4,586,145, Cl. 364-512.000.
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Klioze, Solomon S., to Hoechst-Roussel Pharmaceuticals Inc. cis-4a-Aryl-1,2,3,4,4a,9b-hexahydro-benzofuro[3,2-c]pyridines and intermediates thereof. 4,585,779, Cl. 514-336.000.
Klose, Walter; and Boettcher, Irmgard, to Schering Aktiengesellschaft. Antiinflammatory imidazole derivatives. 4,585,771, Cl. 514-220.000.
Kloster Speedsteel Aktiebolag: *See*—
Westin, Leif, 4,585,619, Cl. 419-28.000.
Klostermann, Horst. Protective grating. 4,586,030, Cl. 340-550.000.
Klueh, David R.; Livingston, Benjamin F.; Martone, James F.; and Zutt, Martin J., Jr., to International Business Machines Corp. Aliphatic polyurethane matrix transfer medium and porous magnesium silicate filler. 4,585,692, Cl. 428-317.900.
Kluger, Jacob N.: *See*—
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Klupfel, Norbert: *See*—
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Knapp, Heinrich, to Robert Bosch GmbH. Electro-magnetically operable valve. 4,585,174, Cl. 239-533.800.
Knickerbocker, Robert H.; and Thomas, Stephen M., to Siemon Company, The. Modular test plug adapter. 4,585,290, Cl. 339-97.00R.
Knierim, Daniel G., to Tektronix, Inc. Error tolerant thermometer-to-binary encoder. 4,586,025, Cl. 340-347.0DD.
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Rosener, Harvey J.; Knierim, David L.; and Dalrymple, John C., 4,586,037, Cl. 340-728.000.
Knisely, Charles, to Sulzer Brothers Limited. Auxiliary blow nozzle for a pneumatic weaving machine. 4,585,038, Cl. 139-435.000.
Knott, Ronald P.: *See*—
DeMario, Edmund E.; and Knott, Ronald P., 4,585,616, Cl. 376-442.000.
Knutson, Kjell K. A.; and Dahl, Carl U., to Saab-Scania Aktiebolag. Exterior rear view mirror having wing-shaped support arms. 4,585,316, Cl. 350-582.000.
Koal, Jan G.; and Wells, Carl V. Flexible piezoelectric switch. 4,585,970, Cl. 310-331.000.
Kobayashi, Hidetoshi; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,585,731, Cl. 430-543.000.
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Kobayashi, Nobuo: *See*—
Taguchi, Hiroshi; Nishimura, Tsunehiko; and Kobayashi, Nobuo, 4,585,703, Cl. 428-446.000.
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Suzuki, Hiroyuki; and Kobayashi, Shinichi, 4,586,099, Cl. 360-128.000.
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Kobler, Armin: *See*—
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,584,951, Cl. 112-97.000.
Kobylinski, Thaddeus P.: *See*—
Beuther, Harold; Kobylinski, Thaddeus P.; Kibby, Charles L.; and Pannell, Richard B., 4,585,798, Cl. 518-715.000.
Kochloefl, Karel: *See*—
Schneider, Michael; and Kochloefl, Karel, 4,585,632, Cl. 423-239.000.
Kochnev, Anatoly M.: *See*—
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.
Koeneman, James B., to Orthotic Limited Partnership. External fixation device. 4,584,995, Cl. 128-92.00A.
Koenig & Bauer AG: *See*—
Germann, Albrecht J.; Munker, Jurgen F. F.; and Wieland, Erich G., 4,584,940, Cl. 101-350.000.
Koepke, Gunther: *See*—
Zlokarnik, Marko; Schindler, Georg; Koepke, Gunther; and Stracke, Werner, 4,585,561, Cl. 210-705.000.
Koga, Motoyuki: *See*—
Morinaga, Akio; Hayashi, Mitsutoshi; and Koga, Motoyuki, 4,584,963, Cl. 118-663.000.
Kohashi, Makoto; Miura, Tanetoshi; Okabe, Kaoru; and Hamada, Haruo, to Hitachi, Ltd. Earphone characteristic measuring device. 4,586,194, Cl. 381-60.000.
Kohlwey, David E., to Riviana Foods Inc. Method for producing rice composition and product. 4,585,664, Cl. 426-619.000.
Kohsaka, Masanobu: *See*—
Okamoto, Masanori; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,585,789, Cl. 514-461.000.
Kohsaka, Yoshio, to Kabushiki Kaisha Toshiba. Washer/dehydrater. 4,584,732, Cl. 8-159.000.
Koike, Hideharu, to Toshiba Shibaura Denki Kabushiki Kaisha. Multi-bit-per-cell read only memory circuit. 4,586,163, Cl. 365-104.000.
Koike, Kazuo; and Kawada, Junji, to Mitsubishi Denki Kabushiki Kaisha. Diskette ejecting mechanism for magnetic disk unit. 4,586,097, Cl. 360-99.000.
Koike, Keiichi: *See*—
Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,585,573, Cl. 252-70.000.
Koizumi, Misao; and Murase, Satoru, to Kabushiki Kaisha Toshiba. Soldered superconductive coils for a pulse magnet. 4,586,012, Cl. 335-216.000.
Kojima, Susumu: *See*—
Mori, Yoshikazu; Kojima, Susumu; and Watabe, Masayuki, 4,585,125, Cl. 209-534.000.
Kokubo, Takashi, to Mitsubishi Monsanto Chemical Company. Weather and impact resistant resin composition and process for its preparation. 4,585,832, Cl. 525-71.000.
Koleske, Joseph V.: *See*—
Osborn, Claiborn L.; and Koleske, Joseph V., 4,585,702, Cl. 428-425.900.
Komamura, Tawara: *See*—
Nakamura, Masaki; Kitamura, Shigehiro; Abe, Takao; and Komamura, Tawara, 4,585,688, Cl. 428-200.000.
Komasaku, Seiichi; Iiyama, Hiroshi; Watanabe, Noboru; and Tanaka, Osamu, to Jeco Co., Ltd. Angle change detector. 4,584,778, Cl. 33-366.000.
Komatsu, Hiroshi, to Fuji Jukogyo Kabushiki Kaisha. Clutch disk for a clutch and method of treating a facing of a clutch. 4,585,104, Cl. 192-70.140.
Komatsu, Katsuaki: *See*—
Ohta, Tatsuo; and Komatsu, Katsuaki, 4,585,689, Cl. 428-216.000.
Kondo, Mitsuru, to Ricoh Company, Ltd. Transmission control system for facsimile transceiver. 4,586,088, Cl. 358-257.000.
Kondo, Yoshie: *See*—
Tsukiyama, Tokuhiro; Kondo, Yoshie; Kakuse, Katsuharu; Saba, Shinpei; Ozaki, Syoji; and Itoh, Kunihiro, 4,586,027, Cl. 340-347.0DD.

Kondo, Yoshikazu: *See*—
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,585,529, Cl. 204-27.000.
Konen, Karl-Heinz, to Carl Sulberg GmbH & Co. Hinge with lifting-out protection. 4,584,739, Cl. 16-266.000.
Koniger, Max; and Muller, Gerhard, to Messershmitt-Boelkow-Blohm Gesellschaft-mit-beschraenkter Haftung. Opto-electrical device made of silicon for detecting infrared light. 4,586,069, Cl. 357-30.000.
Konishi, Hirokazu: *See*—
Yamamoto, Taizo; and Konishi, Hirokazu, 4,584,817, Cl. 53-329.000.
Konishiroku Photo Ind. Co., Ltd.: *See*—
Ezaki, Atsuo; Enomoto, Morio; Kishita, Takehisa; and Takahashi, Kazuo, 4,585,733, Cl. 430-569.000.
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Kishi, Ken-ichi; Sato, Keiji; Kasuya, Takahira; Ito, Kunio; and Wada, Tsuneo, 4,585,723, Cl. 430-106.000.
Nakamura, Masaki; Kitamura, Shigehiro; Abe, Takao; and Komamura, Tawara, 4,585,688, Cl. 428-200.000.
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Konoike, Takehiro; and Tamura, Hiroshi, to Murata Manufacturing Co., Ltd. Dielectric ceramic composition for microwave frequencies. 4,585,744, Cl. 501-135.000.
Konotsune, Shiro; Higashi, Hiromi; Wada, Masami; Maehara, Hiroshi; and Tsuji, Kazuyuki, to Chisso Corporation. Silicon-containing step ladder polymer and a process for producing the same. 4,585,834, Cl. 525-342.000.
Kontoghiorghes, George: *See*—
Hider, Robert C.; Kontoghiorghes, George; and Silver, Jack, 4,585,780, Cl. 514-348.000.
Koop, Dale W., to Hastings Manufacturing Company. Piston and oil control ring therefor. 4,585,237, Cl. 277-139.000.
Kopacz, Thomas J.: *See*—
Rosch, Paulette M.; and Kopacz, Thomas J., 4,585,450, Cl. 604-390.000.
Kopka, Karll: *See*—
Sitta, Jaroslav; Kopka, Karll; Petrik, Frantisek; and Vyjidacek, Kvetoslav, 4,585,049, Cl. 164-324.000.
Koprunner, Ernst. Condensate draining system for temperature regulated steam operated heat exchangers. 4,585,054, Cl. 165-112.000.
Koser, James R.; and Papa, Ralph A., to Du Pont de Nemours, E. I., and Company. Transition adapter connector employing a printed circuit board. 4,585,284, Cl. 339-17.00C.
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Hiraki, Shun-ichi; Tsuru, Kazuo; Usuki, Yoshikazu; and Koshino, Yutaka, 4,585,489, Cl. 148-1.500.
Koshoffer, John M.; Ekstedt, Edward E.; Samuel, Billy P.; and Stamm, Edward I., to General Electric Company. Gas turbine engine carburetor. 4,584,834, Cl. 60-737.000.
Kosmas, Sardelis: *See*—
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Koteff, Walter B.: *See*—
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Kott, Alan C.: *See*—
Messing, Sheldon H.; Gibbs, Marylu B.; and Kott, Alan C., 4,585,800, Cl. 521-31.000.
Kottemann, William J. Orthodontic arch wire. 4,585,414, Cl. 433-20.000.
Kovatch, William A.: *See*—
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Koyama, Akio: *See*—
Oda, Osamu; Onozuka, Arata; and Koyama, Akio, 4,585,621, Cl. 420-579.000.
Koyama, Shigeo; Kozuka, Nobuhiko; and Kano, Atsushi, to Mita Industrial Co., Ltd. Shell-type electrostatic copying apparatus. 4,585,324, Cl. 355-3.00R.
Kozuka, Nobuhiko: *See*—
Koyama, Shigeo; Kozuka, Nobuhiko; and Kano, Atsushi, 4,585,324, Cl. 355-3.00R.
Krackeler, Joseph J.; and Weir, Fred E., to Raychem Corporation. Method of covering a member. 4,585,607, Cl. 264-229.000.
Kraemer, Ludwig. Blind rivet. 4,585,383, Cl. 411-38.000.
Kraft, Inc.: *See*—
Roland, John F., 4,585,738, Cl. 435-176.000.
Kramer, James H., to B. F. Goodrich Company, The. Rubber-plastic composite. 4,585,215, Cl. 267-124.000.
Kramer, James H., to B. F. Goodrich Company, The. Bearing assembly. 4,585,359, Cl. 384-98.000.
Krapf, Charles W.: *See*—
Harrington, Richard H.; and Krapf, Charles W., 4,585,082, Cl. 177-210.00C.
Kreachbaum, Richard D.: *See*—
Bartilson, Benjamin M.; Kreachbaum, Richard D.; Pettenski, Thomas A.; and Voedisch, John T., 4,584,861, Cl. 72-214.000.
Kremer, Ross A.; and Saunders, Stephen W., to Mobil Oil Corporation. Treatment of water used in preparing phosphate matrix slurries. 4,585,629, Cl. 423-167.000.
Kremer, Wolfgang: *See*—
Meixner, Jurgen; Traenckner, Hans-Joachim; Kremer, Wolfgang; and Muller, Manfred, 4,585,828, Cl. 524-604.000.
Krislav, Semyon: *See*—
Fielding, Alfred W.; Bertram, George T.; Krislav, Semyon; and Askinazi, Joel, 4,584,822, Cl. 53-452.000.
Kruschik, Klaus: *See*—
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,585,250, Cl. 280-618.000.
KRW Energy Systems Inc.: *See*—
Marburger, David C., 4,585,057, Cl. 165-134.100.
Kubach, Hans; and Hascher-Reichl, Asta, to Robert Bosch GmbH. Electromagnetically actuatable valve. 4,585,176, Cl. 239-585.000.
Kubo, Hirofumi: *See*—
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Kubota, Ltd.: *See*—
Hiyamuta, Shota, 4,584,824, Cl. 56-13.900.
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Kuchera, Ray A.: *See*—
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Kuhl, Gunter H., to Mobil Oil Corporation. Synthesis of crystalline silicate ZSM-5. 4,585,638, Cl. 423-328.000.
Kuhlein, Klaus: *See*—
Engelhardt, Friedrich; Kuhlein, Klaus; Balzer, Juliane; Dursch, Walter; and Kleiner, Hans-Jerg, 4,585,845, Cl. 526-240.000.
Kuhn, Howard A.: *See*—
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Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, to Aktiengesellschaft Adolph Saurer. Thread-guiding roll. 4,584,951, Cl. 112-97.000.
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., to Phillips Petroleum Company. Hydrotreating catalysts. 4,585,751, Cl. 502-211.000.
Kumura, Haruyoshi: *See*—
Abo, Keiju; Kumura, Haruyoshi; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,584,909, Cl. 74-868.000.
Kunimoto, Katsunobu: *See*—
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Kunito, Mitsuhiro, to Kabushiki Kaisha ASK Kenkyusho. Steel sheet pile, sheet pile assembly thereof and the method of constructing the assembly. 4,585,678, Cl. 428-33.000.
Kuo, An-Li; Goddard, Errol D.; and Ritscher, James S., to Union Carbide Corporation. Internal mold release for reaction injection molded polyurethanes. 4,585,829, Cl. 524-714.000.
Kurata, Kazuyuki; Motoki, Kiyozi; and Yamada, Yoshihiro, to Sharp Kabushiki Kaisha. Word processing system for displaying information in full character and layout mode. 4,586,156, Cl. 364-900.000.
Kurimoto Ltd.: *See*—
Tsuji, Yoshihiro; Fujihara, Fumio; and Nishikawa, Yoichi, 4,585,179, Cl. 241-101.700.
Kurita, Kenji, to Canon Kabushiki Kaisha. Recording head. 4,586,054, Cl. 346-76.0PH.
Kuriyama, Mitsuo: *See*—
Yoshioka, Takatoshi; Kirihara, Seishin; Siga, Masao; Kuriyama, Mitsuo; Yoshida, Takehiko; and Murohoshi, Takanori, 4,585,478, Cl. 75-124.000.
Kurland, Kenneth Z. Means and method of implanting bioprosthetics. 4,585,458, Cl. 623-13.000.
Kuroda, Takao; and Shimizu, Ryuji, to NEC Corporation. Automatic tracking system for antenna. 4,586,050, Cl. 343-426.000.
Kuroyanagi, Tomomitsu, to Hitachi, Ltd. Ghost reduction circuit arrangement for a television receiver. 4,586,083, Cl. 358-167.000.
Kurt Wolf & Co. KG: *See*—
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Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, to Tokyo Gas Company Ltd.; and Tokico Ltd., JPX. Air fuel ratio control system for furnace. 4,585,161, Cl. 236-15.0BD.
Kuwahara, Heikichi: *See*—
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Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, to Aisin-Warner K.K.; and Toyota Jidosha K.K. Automatic transmission locking mechanism for parking. 4,585,103, Cl. 192-4.00A.
Kuzuya, Susumu, to Brother Kogyo Kabushiki Kaisha. Paper feeding apparatus. 4,585,224, Cl. 271-127.000.

Kvist, Sten-Ake: *See*—
Tengzelius, Jan; Kvist, Sten-Ake; and Jansson, Patricia, 4,585,480, Cl. 75-255.000.

Kwan, Cheng L., to Hang Tjuk Industrial Co. Ltd. Toy vehicle. 4,585,423, Cl. 446-230.000.

Kwasiborski, Stanley, Jr.: *See*—
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Kymi Kymmeno Oy: *See*—
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Kyocera Corporation: *See*—
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LaBate, Joseph, to Pitney Bowes Inc. Resilient document feeding member. 4,585,226, Cl. 271-264.000.

Lacefield, William B.: *See*—
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Lagerstedt, Jan E. R.; and Arnspang, Bengt-Arne, to Tetra Pak International AB. Method for sealing an emptying opening and an arrangement for the realization of the method. 4,585,498, Cl. 156-69.000.

Lakodey, Pierre: *See*—
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Lamarche, Paul E., to Borg-Warner Automotive, Inc. Long travel series damper for continuously variable transmission. 4,585,427, Cl. 464-67.000.

Lambert, G. Steven; and Lambert, Michael P. Can lid with integral push-in tab. 4,585,140, Cl. 220-268.000.

Lambert, Hans R., to Astra Meditec. Preparation of hydrophilic coating. 4,585,666, Cl. 427-2.000.

Lambert, Michael P.: *See*—
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Lambro Industries, Inc.: *See*—
Garber, Hyman, 4,584,735, Cl. 15-257.700.

Lammers, Arend J. W.: *See*—
Has, Peter V.; Lammers, Arend J. W.; and Nitert, Gerhardus L., 4,585,911, Cl. 200-61.530.

Lamparsky, Dietmar: *See*—
Kaiser, Roman; and Lamparsky, Dietmar, 4,585,662, Cl. 426-534.000.

Lancaster Colony Corporation: *See*—
Lockwood, James R.; and Loeffler, Larry A., 4,585,243, Cl. 280-154.50R.

Lancaster, Gerald M.; Turner, Robert B.; and Booth, Llewellyn D., to Dow Chemical Company, The. Rigid foam with improved "K" factor by reacting a polyol, a polyisocyanate and at least one compound having at least one primary aliphatic amine group. 4,585,804, Cl. 521-128.000.

Landa, Benzion, to Savin Corporation. Platen cover assembly for copier. 4,585,329, Cl. 355-3.00R.

Landaburu, Ricardo H.; Amphlett, Godfrey W.; Branson, Roy E.; and Shaw, Arthur B., to Armour Pharmaceutical Co. Process for pasteurizing fibronectin. 4,585,654, Cl. 424-101.000.

Landis, William C.; and Pudlo, Frank S., to RCA Corporation. Multiemitter optical fiber device. 4,585,300, Cl. 350-96.200.

Lane, George A.; Rossow, Harold E.; and Teot, Arthur S., to Dow Chemical Company, The. Reversible phase change composition for storing thermal energy. 4,585,572, Cl. 252-70.000.

Lang, Gerard; Leduc, Madeleine; and Malaval, Alain, to L'Oreal. 3-benzylidene-camphors, process for their preparation and their use in protection against UV rays. 4,585,597, Cl. 260-507.00R.

Lantz, Brigitte: *See*—
Freyria, Jean; and Lantz, Brigitte, 4,585,794, Cl. 514-434.000.

Largione, Robert: *See*—
Bowe, Woodford A.; Largione, Robert; and Levy, Eugene J., 4,585,622, Cl. 422-50.000.

Laroche, Paul; and Pompon, Jean-Bernard, to Chloe Chimie. Method of treating a polymerizing reactor. 4,585,842, Cl. 526-62.000.

Laska, Eugene M.: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,585,783, Cl. 514-408.000.

Laskaris, Evangelos T.; and Jones, Donald W., to General Electric Company. Persistent current switch for high energy superconductive solenoids. 4,586,017, Cl. 338-32.00S.

Lassen, Jorgen B.; Christensen, Jorgen A.; Petersen, Erling N.; and Hansen, John B., to A/S Ferrosan. (−)-Trans-4-(4-fluorophenyl)-3-(4-methoxyphenoxy)methylpiperidine for potentiating 5-HT. 4,585,777, Cl. 514-317.000.

Latchways Limited: *See*—
Tupper, Alan W., 4,584,945, Cl. 104-182.000.

Lau, John R.: *See*—
Jacob, Joseph; and Lau, John R., 4,585,792, Cl. 514-474.000.

Lau, Roland L.; and Hudson, John S., to Hardwicke Chemical Company. Preparation of substituted benzaldehydes. 4,585,898, Cl. 568-433.000.

Lautenschlager, Reinhard, to Karl Lautenschlager KG, Mobelbeschlagfabrik. Crosslink hinge with a greater opening outthrust. 4,584,738, Cl. 16-238.000.

LaVars, Everett G.: *See*—
Paddock, Paul F.; and LaVars, Everett G., 4,585,126, Cl. 209-539.000.

Law, Kock-Yee, to Xerox Corporation. Processes for the preparation of mixed squaraine compositions. 4,585,895, Cl. 564-307.000.

Lawrence Pump and Engine Company: *See*—
Hutchins, Clement, 4,584,865, Cl. 73-7.000.

Lazcano-Navarro, Arturo; Villasenor-Mejia, Antonio; Alcantara, Miguel A.; and Fernandez-Garcia, Jorge, to Instituto Mexicano de Investigaciones Siderurgicas. Method for producing liquid steel from iron ore. 4,585,476, Cl. 75-59.170.

Lazzari, Angelo A.: *See*—
Destree, Xavier P.; and Lazzari, Angelo A., 4,585,487, Cl. 106-99.000.

Lear Siegler, Inc.: *See*—
Norton, Jack R., 4,585,026, Cl. 137-512.100.

Leduc, Madeleine: *See*—
Lang, Gerard; Leduc, Madeleine; and Malaval, Alain, 4,585,597, Cl. 260-507.00R.

Lee, Marlow, to H & H Tube & Mfg. Co. Heat transfer tube assembly. 4,585,059, Cl. 165-154.000.

Lee, Ving J., to American Cyanamid Company. Dimethylfurano heterocyclic analogs of daunomycin. 4,585,760, Cl. 514-34.000.

Leff, Jerry: *See*—
Clecak, Nicholas J.; Cox, Robert J.; Feng, Joseph S.; and Leff, Jerry, 4,585,310, Cl. 350-341.000.

Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, to Mathias Bauerle GmbH. Series feeding device for a folding machine. 4,585,219, Cl. 270-46.000.

Lehureau, Jean-Claude: *See*—
Cornet, Jean; Lehureau, Jean-Claude; and Magna, Henriette, 4,586,165, Cl. 365-126.000.

Leiber, Heinz, to Robert Bosch GmbH. Method and system of controlling braking pressure in a vehicle brake. 4,585,280, Cl. 303-100.000.

Leigh, Antony W.: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., 4,586,131, Cl. 364-200.000.

Leigh-Monstevens, Keith V., to Automotive Products plc. Throw-out bearing carrier member for motor vehicle clutch control mechanism. 4,585,107, Cl. 192-85.0CA.

Leigh-Monstevens, Keith V., to Automotive Products plc. Hydraulic slave cylinder for motor vehicle clutch control mechanism. 4,585,108, Cl. 192-85.0CA.

Leigh-Monstevens, Keith V.: *See*—
Shirley, Graham J.; and Leigh-Monstevens, Keith V., 4,585,109, Cl. 192-85.0CA.

Lemaire, Marc; and Le Roc'h, Roland, to Brissonneau et Lotz Marine. Method and a machine for handling drill pipes. 4,585,079, Cl. 173-164.000.

Lemal, Clayton, to Canadian Patents and Development Limited. Heat pump. 4,584,844, Cl. 62-160.000.

Lengronne, Bernard: *See*—
Minjolle, Louis; Drouet, Claudette; Lengronne, Bernard; Hordonneau, Alain; and Capdepuy, Bernard, 4,585,500, Cl. 156-89.000.

Lenk, Erich: *See*—
Schippers, Heinz; Lenk, Erich; Schiminski, Herbert; and Turk, Herbert, 4,585,181, Cl. 242-43.00A.

Lenk, Michael; and Podiak, Richard S., to Champion Spark Plug Company. Low engine oil sensing switch. 4,584,977, Cl. 123-196.00S.

Lentz, Carl M.; Overton, James R.; and Cornell, David D., to Eastman Kodak Company. Carbonylation process for the production of monoesters aromatic dicarboxylic acids from phosphonium salts. 4,585,889, Cl. 560-90.000.

Leonard, Kirke, to Rockwell International Corporation. Tooling system for superplastic forming of metals. 4,584,860, Cl. 72-61.000.

Le Rat, Guy, to Framatome & Cie. Method of monitoring an electricity generating station equipped with a nuclear reactor. 4,585,609, Cl. 376-245.000.

Le Roc'h, Roland: *See*—
Lemaire, Marc; and Le Roc'h, Roland, 4,585,079, Cl. 173-164.000.

Leroy, Andre R.; and Flamme, Jean-Marie G. D. Windscreen wiper system. 4,584,734, Cl. 15-250.210.

Lesko, Gerald J. Torque sensor. 4,584,884, Cl. 73-862.190.

Letcher, Robert L.: *See*—
Williams, Jeffrey W., 4,585,653, Cl. 424-98.000.

Letovsky, Howard. Pivot and translation motion control apparatus. 4,584,896, Cl. 74-479.000.

Leung, Leung S.; and Chong, Yat O., to University of Queensland. Heat exchange between solids. 4,585,051, Cl. 165-1.000.

Levanoni, Menachem: *See*—
Chastang, Jean-Claude A.; Hildenbrand, Walter W.; and Levanoni, Menachem, 4,585,348, Cl. 356-369.000.

Lever Brothers Company: *See*—
Keulemans, Cornelis N. M.; and Smits, Gerard, 4,585,593, Cl. 260-410.700.

Levy, Eugene J.: *See*—
Bowe, Woodford A.; Largione, Robert; and Levy, Eugene J., 4,585,622, Cl. 422-50.000.

Levy, Moshe; Gassner, Shaul A.; and Farber, Reuben, to Yeda Research and Development Co., Ltd. Prosthetic tendon. 4,584,722, Cl. 623-13.000.

Lewis, John E. Digital computer for determining scuba diving parameters for a particular diver. 4,586,136, Cl. 364-418.000.

Liautaud, James P.; Westberg, John K., II; and Stultz, Peter F., to Liautaud, James P. Swivel base assembly. 4,585,197, Cl. 248-349.000.

Liaw, Dar-Kuei. Ball pen combined with electronic watch. 4,585,364, Cl. 401-195.000.

Libbey-Owens-Ford Company: *See*—
Hubbard, Charles E.; and Berkemeier, Donald E., 4,585,034, Cl. 138-111.000.

Schave, Richard D.; McComb, Walter D.; and Rudolph, Andrew W., 4,585,343, Cl. 356-237.000.
Lie, Hans P., to AT&T Bell Laboratories. Switched capacitor feedback sample-and-hold circuit. 4,585,956, Cl. 307-353.000.
Liess, Wolfgang: *See*—
Gorzel, Heribert; and Liess, Wolfgang, 4,586,003, Cl. 330-297.000.
Lievesley, John B., to Autoroofs Limited. Vehicle sun roofs. 4,585,269, Cl. 296-214.000.
Liley, Chester G. Mounting system for antenna for pop-top camping trailers. 4,586,052, Cl. 343-713.000.
Liliano, Bassi, to Innse-Innocenti Santeustacchio S.p.A. Apparatus for the lateral transfer of mandrels in a tube rolling mill. 4,585,114, Cl. 198-570.000.
Lill, Anton: *See*—
Gille, Gunther; Goertler, Horst; Lill, Anton; Prohaska, Hans; Rachner, Horst; and Theurer, Thomas, 4,585,980, Cl. 318-444.000.
Lillibridge, Harold R., to American Envelope Company. Envelope forming machine with envelope blank stack sensor. 4,585,221, Cl. 271-10.000.
Lilliwyte Societe Anonyme: *See*—
Wedlake, Roger J., 4,585,712, Cl. 429-50.000.
Lin, Burn J.; and Taur, Yuan, to International Business Machines Corporation. System for real-time monitoring the characteristics, variations and alignment errors of lithography structures. 4,585,342, Cl. 356-124.000.
Lin, Frank W., to TeleVideo Systems, Inc. Method and apparatus for blanking noise present in an alternating electrical signal. 4,585,997, Cl. 328-165.000.
Lin, John W. P.; and Dudek, Lesley P., to Xerox Corporation. Silylated compositions, and deuterated hydroxyl squaraine compositions and processes. 4,585,884, Cl. 556-413.000.
Lincoln Center for the Performing Arts, Inc.: *See*—
St. Arnaud, William J.; and Switzer, Israel, 4,586,081, Cl. 358-121.000.
Lindblom, Curtis H.; and Martenas, Wayne B., to Sperry Corporation. Electric clutch brake apparatus. 4,585,115, Cl. 198-624.000.
Linderborg, Irma, to Kymi Kymmeno Oy. Control agent for protecting timber against fungi employing a mixture of an organic carboxylic acid salt and quaternary ammonium salt. 4,585,795, Cl. 514-558.000.
Lindsay, Scott. Isotrophic loudspeaker. 4,585,090, Cl. 181-163.000.
Ling, Nicholas C.: *See*—
Brazeau, Paul E., Jr.; Bohlen, Peter; Esch, Frederick S.; Ling, Nicholas C.; and Guillemin, Roger C. L., 4,585,756, Cl. 514-12.000.
Linhoff & Thesenfitz: *See*—
Thesenfitz, Klaus, 4,585,354, Cl. 366-25.000.
Link, Glennie W. Step gauge for setting up wood working tools for specialty processing. 4,584,774, Cl. 33-168.00R.
Linkner, Herbert L., Jr., to Kelsey-Hayes Company. Proportional solenoid. 4,586,013, Cl. 335-276.000.
Linnenbrink, Thomas E., to Q-Dot, Inc. Charge splitting sampler systems. 4,586,010, Cl. 333-165.000.
Lion Corporation: *See*—
Maeyama, Tsutomu; Kaneko, Kenji; and Ishii, Shigeru, 4,585,648, Cl. 424-49.000.
Lipha, Lyonnaise Industrielle Pharmaceutique: *See*—
Berthelon, Jean-Jacques, 4,585,786, Cl. 514-432.000.
Lippmann, Raymond; and Chintyan, James R., to General Motors Corporation. High voltage protection device with a tape covered spark gap. 4,586,105, Cl. 361-117.000.
Liptay-Wagner, Nicholas; Renaud, Roland; Pryor, Timothy R.; and Clarke, Donald A., to Diffracto, Ltd. Photodetector array based optical measurement systems. 4,585,947, Cl. 250-560.000.
Liston Edwards, Inc.: *See*—
Braig, James R.; and Liston, Max D., 4,586,026, Cl. 340-347.0AD.
Liston, Max D.: *See*—
Braig, James R.; and Liston, Max D., 4,586,026, Cl. 340-347.0AD.
Liu, Su-Hwa. Steam-heating breast massager. 4,584,992, Cl. 128-24.100.
Liu, Wan-Li, to General Electric Company. UV curable silicone block copolymers. 4,585,670, Cl. 427-54.100.
Livingston, Benjamin F.: *See*—
Klueh, David R.; Livingston, Benjamin F.; Martone, James F.; and Zutt, Martin J., Jr., 4,585,692, Cl. 428-317.900.
Livingston, John H.; and DeCote, Robert, Jr., to Cordis Corporation. Cardiac pacer having stimulation threshold measurement circuit. 4,585,006, Cl. 128-419.0PG.
Ljung, Bo H. G., to Singer Company, The. Pathlength controller for three-axis ring laser gyroscope assembly. 4,585,346, Cl. 356-350.000.
Lloyd, Vernon J.: *See*—
Bommaraju, Tilak V.; Hauck, William V.; and Lloyd, Vernon J., 4,585,579, Cl. 252-387.000.
Lo, Jhy-Dou R.; and Schlich, William R., to General Electric Company. Two-step process for producing polyetherimides. 4,585,852, Cl. 528-185.000.
Loberg, Michael D.: *See*—
Barker, Samuel L.; and Loberg, Michael D., 4,585,009, Cl. 128-655.000.
Lockheed Corporation: *See*—
Buxton, John A., 4,585,189, Cl. 244-54.000.
Panushka, Lawrence C., 4,584,898, Cl. 74-501.50R.
Lockheed Missiles & Space Company, Inc.: *See*—
Luce, Robert S., 4,585,996, Cl. 324-442.000.
Lockwood, James R.; and Loeffler, Larry A., to Lancaster Colony Corporation. Spray controlling vehicle splash guard. 4,585,243, Cl. 280-154.50R.
Loeffler, Larry A.: *See*—
Lockwood, James R.; and Loeffler, Larry A., 4,585,243, Cl. 280-154.50R.
Logan, George T., to Logan, Thomas. Compact ratchet wrench with quick-release lever. 4,584,913, Cl. 81-91.200.
Logan, Roger: *See*—
Johnson, Robert W., Jr.; and Logan, Roger, 4,585,584, Cl. 260-104.000.
Logan, Thomas: *See*—
Logan, George T., 4,584,913, Cl. 81-91.200.
Lohn, Paul, to Control Specialties, Inc. Device and method for testing differential pressure measuring passageways. 4,584,871, Cl. 73-40.000.
Long, James F.: *See*—
Schneider, Richard T.; and Long, James F., 4,585,948, Cl. 250-578.000.
Long, John V.: *See*—
Gagliani, John; and Long, John V., 4,585,805, Cl. 521-129.000.
Lonza Ltd.: *See*—
Jolidon, Synese; and Meul, Thomas, 4,585,887, Cl. 560-38.000.
Lopez, Daniel: *See*—
Rilly, Gerard; Morizot, Gerard; Lopez, Daniel; and Weisser, Erich, 4,586,016, Cl. 336-96.000.
L'Oreal: *See*—
Lang, Gerard; Leduc, Madeleine; and Malaval, Alain, 4,585,597, Cl. 260-507.00R.
Louis, Joseph E.: *See*—
Beck, Richard, Jr.; and Louis, Joseph E., 4,584,926, Cl. 92-12.200.
Lovett, Paul S.; and Schoner, Ronald G., to Du Pont de Nemours, E. I., and Company. Plasmid for foreign gene expression in *B. subtilis*. 4,585,739, Cl. 435-253.000.
LTV Aerospace and Defense Company: *See*—
Eden, Dayton D., 4,586,164, Cl. 365-127.000.
Shuford, David M., 4,585,675, Cl. 427-376.200.
Luccarelli, Domenick, Jr.: *See*—
Pittet, Alan O.; Muralidhara, Ranya; Luccarelli, Domenick, Jr.; Miller, Kevin P.; and Vock, Manfred H., 4,585,663, Cl. 426-535.000.
Luce, Robert S., to Lockheed Missiles & Space Company, Inc. Instrument for measuring electrical conductivity of a liquid. 4,585,996, Cl. 324-442.000.
Lue, Tom P.; Tanagho, Emil A.; and Schmidt, Richard A., to University of California, Regents of. Method and pacemaker for stimulating penile erection. 4,585,005, Cl. 128-419.00R.
Lueders, Arthur: *See*—
Davis, Ralph; Bellotti, Marc; and Lueders, Arthur, 4,585,436, Cl. 604-29.000.
Lueger, Claus, to Textilma AG. Tricot knitting machine, particularly galloon crocheting machine. 4,584,853, Cl. 66-203.000.
Luggen, Leo J. Stock baler. 4,584,935, Cl. 100-26.000.
Luker, Edward, to Sunbeam Plastics Corporation. Child resistant dispenser. 4,585,151, Cl. 222-153.000.
Lum, Francis: *See*—
Chambors, John M.; and Lum, Francis, 4,586,094, Cl. 360-77.000.
Lund, Arnold M. Wind turbine with multiple generators. 4,585,950, Cl. 290-44.000.
Lundquist, Lynn. Method of plugging a hole in an object. 4,584,755, Cl. 29-451.000.
Lundqvist, Harald. Diagonally stiffeaed structure and method of forming same. 4,585,129, Cl. 211-189.000.
Lunova, Casper P.: *See*—
Corrigan, James I.; and Lunova, Casper P., 4,585,918, Cl. 219-110.000.
Lynch, Matthew J., to ICI Americas Inc. Dentifrice formulation and method of treating teeth, mouth and throat therewith to reduce plaque accumulation and irritation. 4,585,649, Cl. 424-49.000.
Lyons, Robert A., Jr.; and Maschek, Johnnie B., Jr., to Hydra-Rig Incorporated. Apparatus for inserting and withdrawing coiled tubing with respect to a well. 4,585,061, Cl. 166-77.000.
Lyutov, Lyudmil G.: *See*—
Atanasov, Nikolay A.; Lyutov, Lyudmil G.; Mircheva, Vera V.; and Stefanov, Stefan R., 4,585,531, Cl. 204-49.000.
M/A-COM DCC, Inc.: *See*—
Kaul, Pradman, 4,586,177, Cl. 370-104.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Rehder, Jurgen; Schuhmann, Siegfried; and Steiner, Gerd, 4,586,148, Cl. 364-550.000.
M&T Chemicals Inc.: *See*—
McMullen, Warren H.; Chessin, Hyman; and Jones, Allen R., 4,585,530, Cl. 204-34.000.
Maa, Jer-shen, to RCA Corporation. Formation of conductive lines. 4,585,515, Cl. 156-643.000.
Maass, Hans: *See*—
Eckold, Gerd-Jurgen; and Maass, Hans, 4,584,753, Cl. 29-243.500.
Mac Engineering and Equipment Company, Inc.: *See*—
Hogan, Joseph, 4,584,881, Cl. 73-842.000.
MacDougall, Frederick W., to Aerovox Incorporated. Capacitor with idler. 4,586,112, Cl. 361-330.000.
Machinefabriek C. Rijkaart , B.V.: *See*—
De Fockert, Gijsbert, 4,584,934, Cl. 99-462.000.
Mackarous, George. Embossed crest, badge and the like wearing ornament and method of making the same. 4,585,684, Cl. 428-79.000.
Mackrle, Svatopluk: *See*—
Mackrle, Vladimir; and Mackrle, Svatopluk, 4,585,556, Cl. 210-221.200.
Mackrle, Vladimir; and Mackrle, Svatopluk, to Agrozet, koncernova obchodna organizacia. Arrangement for removal of sludge separated

by flotation in the biological activating cleaning of waste waters using a fluid filtration. 4,585,556, Cl. 210-221.200.

MacLeay, Ronald E., to Pennwalt Corporation. Bleach oxidation of N,N'-di-t-octylsulfamide to di-t-octyldiazene. 4,585,857, Cl. 534-587.000.

Mader, Curt H. Three position tailgate. 4,585,265, Cl. 296-1.00S.

Maeda, Kunihiro: *See*—
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.

Maeda, Terunobu: *See*—
Fujita, Keiichi; Nakauchi, Hiroshi; Kita, Tatsuo; Nakagawa, Yoshiki; and Maeda, Terunobu, 4,585,486, Cl. 106-86.000.

Maeda, Yukio: *See*—
Nagayama, Kazuhiko; Masuda, Masami; and Maeda, Yukio, 4,585,379, Cl. 409-147.000.

Maehara, Hiroshi: *See*—
Konotsune, Shiro; Higashi, Hiromi; Wada, Masami; Maehara, Hiroshi; and Tsuji, Kazuyuki, 4,585,834, Cl. 525-342.000.

Maeyama, Hikaru: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Maeyama, Tsutomu; Kaneko, Kenji; and Ishii, Shigeru, to Lion Corporation. Dentifrice composition comprising zirconium-bonded synthetic amorphous silicate. 4,585,648, Cl. 424-49.000.

Magar, Surendar S.: *See*—
Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., 4,586,131, Cl. 364-200.000.

Magg, Hans: *See*—
Preis, Lothar; Schmidt, Rudolf; Esser, Josef; and Magg, Hans, 4,585,811, Cl. 523-206.000.

Magna, Henriette: *See*—
Cornet, Jean; Lehureau, Jean-Claude; and Magna, Henriette, 4,586,165, Cl. 365-126.000.

Magna Interational Inc.: *See*—
Fisher, Robert J., 4,585,200, Cl. 248-487.000.

Mainwaring, David E.: *See*—
Cadzow, Mark D.; Elkes, Graham J.; Ewin, Gavin J.; and Mainwaring, David E., 4,585,548, Cl. 209-5.000.

Maki, Hiroshi: *See*—
Harada, Haruhisa; Maki, Hiroshi; and Sasaki, Shigeru, 4,585,896, Cl. 564-403.000.

Makler, Amnon. Device for injecting material directly into uterine cavity. 4,585,438, Cl. 604-106.000.

Malabarba, Adriano; Cavalleri, Bruno; and Ferrari, Pietro, to Gruppo Lepetit S.p.A. Water-soluble alkanoyloxy and alkoxycarbonyloxy rifampicin derivatives, process for its preparation, intermediates, and its pharmaceutical composition as antibacterials. 4,585,589, Cl. 260-239.30P.

Malaval, Alain: *See*—
Lang, Gerard; Leduc, Madeleine; and Malaval, Alain, 4,585,597, Cl. 260-507.00R.

Malaviya, Shashi D.: *See*—
Jambotkar, Chakrapani G.; and Malaviya, Shashi D., 4,584,763, Cl. 29-578.000.

Malet, Jean C.: *See*—
Casselman, Chantal; Malet, Jean C.; Sophy, Yvon; and Pacton, Roger, 4,584,802, Cl. 52-169.700.

Malghan, Subhaschandra G., to Exxon Research & Engineering Company. Flotation of upper zone copper sulfide ores. 4,585,549, Cl. 209-166.000.

Malik, Randhir S.; and Patoka, Martin H., to AT&T Bell Laboratories. Current limit shutdown circuit with time delay. 4,586,120, Cl. 363-21.000.

Mallinckrodt, Inc.: *See*—
McGrail, Thomas W., 4,584,998, Cl. 128-604.000.

Malone, Paul E.: *See*—
Coppola, Patrick S.; and Malone, Paul E., 4,585,205, Cl. 251-26.000.

Malyon, Brian R., to British Library Board, The. Document copiers. 4,585,334, Cl. 355-25.000.

Manabe, Mikio: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Manesse, Jean-Pierre; and Angibaud, Jacques, to Alsthom-Atlantique. Mechanical connection means. 4,585,369, Cl. 403-322.000.

Mannes, Andrew J., to Ivy Medical, Inc. Miniature intravenous infusion rate controller. 4,585,442, Cl. 604-250.000.

Mannesmann Rexroth GmbH: *See*—
Hein, Theo; and Holtfreter, Gotz, 4,586,187, Cl. 373-106.000.

Mannesmann Tally Corporation: *See*—
Bringhurst, Edward D., 4,584,937, Cl. 101-93.040.

Manno, Joe. Post and beam construction. 4,585,365, Cl. 403-6.000.

Manville Corporation: *See*—
Hounsel, Mack A.; and Cimochowski, Anthony E., 4,584,814, Cl. 52-747.000.

Marburger, David C., to KRW Energy Systems Inc. Cooled tubesheet inlet for abrasive fluid heat exchanger. 4,585,057, Cl. 165-134.100.

Marchetti, Augusto. Self-sizing taping machine for cartons. 4,585,504, Cl. 156-351.000.

Marcucci, Rudolph V.; and Pai, Robert Y., to GTE Products Corporation. Apparatus for manufacturing a discharge lamp envelope having multiple constrictions. 4,585,468, Cl. 65-277.000.

Marier, Gregory J., to Yamaha Hatsudoki Kabushiki Kaisha. V-belt type continuously variable transmission. 4,585,429, Cl. 474-12.000.

Markert, Jurgen: *See*—
Schwander, Hansrudolf; Markert, Jurgen; and Aeschlimann, Peter, 4,585,460, Cl. 8-549.000.

Marks, Eugene A.: *See*—
Peters, Arthur J.; and Marks, Eugene A., 4,586,109, Cl. 361-283.000.

Marks, Robert J., to Reliance Electric Company. Locking system for flood cover. 4,585,141, Cl. 220-326.000.

Marple, Jack W., to Union Carbide Corporation. Metal cathode collector having a protective surface layer of a metal oxide. 4,585,715, Cl. 429-194.000.

Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Pontevivo, Michele, to Montedison S.p.A. Silanated quinacridone dyes. 4,585,864, Cl. 546-14.000.

Martello, Rita A.; and Berecz, Endre L. Instant cooling device for cosmetics. 4,584,847, Cl. 62-293.000.

Martenas, Wayne B.: *See*—
Lindblom, Curtis H.; and Martenas, Wayne B., 4,585,115, Cl. 198-624.000.

Martens, Jan W. D.; and Peeters, Winfried L., to U.S. Philips Corporation. Thermo-magneto-optical memory device and recording medium therefor. 4,586,092, Cl. 360-59.000.

Martens, John D., to Elfab Corp. Multi-row press fit connector for use with bus bars. 4,585,285, Cl. 339-17.0LC.

Martin, Charles L.: *See*—
Chazelas, Elie C.; Cheron, Philippe R. P.; and Martin, Charles L., 4,585,305, Cl. 350-96.210.

Martin, Richard J. Finger hole insert for bowling balls. 4,585,230, Cl. 273-63.00A.

Martin, Richard L.; and Baranowski, Michael B., to Shiley, Incorporated. Disposable holder for prosthetic heart valve. 4,585,453, Cl. 623-2.000.

Martin, Ronald E.; and Plasse, Paul A., to International Fuel Cells Corporation. Method for using anodes having $NiCo_2O_4$ catalyst for the electrolysis of potassium hydroxide solutions and method of making an anode containing $NiCo_2O_4$ catalyst. 4,585,532, Cl. 204-129.000.

Martinez, Alfred J. Gardening tool with plug ejector and detachable cutting chamber. 4,585,072, Cl. 172-22.000.

Martinis, John M.: *See*—
Hilbert, Claude; Martinis, John M.; and Clarke, John, 4,585,999, Cl. 330-61.00R.

Martone, James F.: *See*—
Klueh, David R.; Livingston, Benjamin F.; Martone, James F.; and Zutt, Martin J., Jr., 4,585,692, Cl. 428-317.900.

Maruyama, Akira: *See*—
Nitta, Issei; Nakao, Kenichiro; Miyake, Motoyoshi; Maruyama, Akira; and Takashima, Junko, 4,585,766, Cl. 514-180.000.

Marvin Glass & Associates: *See*—
Rasmussen, Russell G.; Jaworski, Eugene; and Morrison, Howard J., 4,585,426, Cl. 446-428.000.

Maryse, Yves, to Societe de Developpement de Materiels D'Emballage - Sodeme. Carton blank folding, glueing and stapling apparatus. 4,585,432, Cl. 493-59.000.

Masaki, Akira: *See*—
Itoh, Hiroyuki; Masaki, Akira; Yamashita, Hiroki; and Hososaka, Satoshi, 4,586,169, Cl. 365-190.000.

Maschek, Johnnie B., Jr.: *See*—
Lyons, Robert A., Jr.; and Maschek, Johnnie B., Jr., 4,585,061, Cl. 166-77.000.

Maschinenfabrik Augsburg-Nurnberg: *See*—
Neitz, Alfred; and Held, Wolfgang, 4,584,971, Cl. 123-41.210.

Mase, Syunzo; and Soejima, Shigeo, to NGK Insulators, Ltd. Method of producing ceramics. 4,585,499, Cl. 156-89.000.

Mason, Lawrence J.: *See*—
Stoffel, James G.; Statt, William L.; Kluger, Jacob N.; Mason, Lawrence J.; and Ermer, Richard G., 4,585,331, Cl. 355-8.000.

Massachusetts Institute of Technology: *See*—
Raffel, Jack I.; Yasaitis, John A.; Chapman, Glenn H.; and Naiman, Mark L., 4,585,490, Cl. 148-1.500.

Massey-Ferguson Services N.V.: *See*—
Old, John L.; Jenkins, Gorden P.; and Bullock, Derek J., 4,584,899, Cl. 74-532.000.

Masuda, Joji, to Nissan Motor Co., Ltd. Steering wheel for automotive vehicle comprising an inflatable core and thermoset resin cover. 4,584,900, Cl. 74-552.000.

Masuda, Masami: *See*—
Nagayama, Kazuhiko; Masuda, Masami; and Maeda, Yukio, 4,585,379, Cl. 409-147.000.

Masuda, Teruo; Matsuzaki, Masahiro; and Oshita, Shoji, to France Bed Co. Ltd. Self-contained tent. 4,585,020, Cl. 135-95.000.

Masugi, Takashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,585,860, Cl. 544-22.000.

Mathias Bauerle GmbH: *See*—
Lehmann, Werner; Fecker, Rainer; and Fuss, Manfred, 4,585,219, Cl. 270-46.000.

Matijega, Roney J.: *See*—
Nelson, Donald L.; Matijega, Roney J.; and Miller, Dennis P., deceased, 4,585,803, Cl. 521-105.000.

Matney, Earl G., to Tektronix, Inc. 50% point of amplitude and phase detector. 4,585,989, Cl. 324-83.00D.

Matsuda, Yoichi: *See—*
Uozu, Nobuo; Yokoyama, Hiroyoshi; and Matsuda, Yoichi, 4,585,502, Cl. 156-278.000.
Matsuguchi, Yutaka, to Osaka Sealing Printing Co., Ltd. Pressure sensitive label application device. 4,585,505, Cl. 156-361.000.
Matsuguchi, Yutaka, to Osaka Sealing Printing Co., Ltd. Pressure sensitive adhesive label affixing device. 4,585,506, Cl. 156-361.000.
Matsui, Kunio: *See—*
Suzuki, Ryushi; Yamaga, Joji; Matsui, Kunio; and Tsuchiya, Hiroaki, 4,585,465, Cl. 55-52.000.
Matsumoto, Hirofumi, to Nippon Mektron Ltd. Method of providing through hole plating between circuit elements. 4,585,528, Cl. 204-15.000.
Matsumoto, Kenzo, to Tokyo Shibaura Denki Kabushiki Kaisha. Image signal-processing system based on synthetic aperture technique. 4,586,135, Cl. 364-414.000.
Matsumoto, Makoto: *See—*
Evans, Edwin R.; and Matsumoto, Makoto, 4,585,848, Cl. 528-15.000.
Matsumoto, Shuzo: *See—*
Yamazaki, Hiroshi; Isayama, Takuro; Ameyama, Minoru; Matsumoto, Shuzo; and Katano, Yasuo, 4,586,058, Cl. 346-140.00R.
Matsumura, Yasushi: *See—*
Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,585,660, Cl. 426-438.000.
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,585,665, Cl. 426-634.000.
Matsunaga, Hideki; Hirate, Naoyuki; and Okada, Akira, to Kabushiki Kaisha Toshiba. Resolution device for semiconductor thin films. 4,584,886, Cl. 73-863.000.
Matsuoka, Kazuhiko: *See—*
Minoura, Kazuo; and Matsuoka, Kazuhiko, 4,585,296, Cl. 350-6.500.
Matsushima, Keiichi, to Aimor Denshi Kabushiki Kaisha. Method and apparatus for printing colored patterns. 4,586,055, Cl. 346-76.0PH.
Matsushita Electric Industrial Co., Inc.: *See—*
Okamura, Yasushi; Tanaka, Kiichirou; and Fujino, Hideo, 4,586,056, Cl. 346-76.0PH.
Matsushita Electric Industrial Co., Ltd.: *See—*
Ichiyanagi, Takashi; and Imanishi, Kiyokazu, 4,584,915, Cl. 82-19.000.
Inoue, Mamoru; Hasegawa, Morimichi; Hara, Shozi; Imanishi, Kiyokazu; Kubota, Yoshiyuki; and Kitagawa, Haruhiko, 4,584,916, Cl. 82-19.000.
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.
Naruo, Noboru; and Kawanishi, Hidekata, 4,586,020, Cl. 338-238.000.
Sugawara, Norio; and Nawa, Motoyuki, 4,585,177, Cl. 239-590.000.
Matsushita Electric Works, Ltd.: *See—*
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,586,040, Cl. 340-825.080.
Matsushita Graphic Communication Systems, Inc.: *See—*
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.
Matsushita, Yasuo: *See—*
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.
Matsuura, Masataka: *See—*
Nonomura, Keisaku; Funada, Fumiaki; and Matsuura, Masataka, 4,586,039, Cl. 340-784.000.
Matsuura, Shuji: *See—*
Nozawa, Ryoichiro; Kawamura, Hideaki; and Matsuura, Shuji, 4,585,377, Cl. 409-2.000.
Matsuura, Yozo, to Richo Co., Ltd. Collected toner conveying device of electrostatic recording apparatus. 4,586,059, Cl. 346-153.100.
Matsuzaki, Masahiro: *See—*
Masuda, Teruo; Matsuzaki, Masahiro; and Oshita, Shoji, 4,585,020, Cl. 135-95.000.
Matsuzaki, Yutaka: *See—*
Yoshitsugu, Noritada; Hashimoto, Masakazu; and Matsuzaki, Yutaka, 4,585,251, Cl. 280-804.000.
Mattei, Riccardo; and Gamberini, Antonio, to G.D. Societa per Azioni. Machine for wrapping and grouping products. 4,584,816, Cl. 53-171.000.
Mattei, Riccardo; Neri, Armando; Gobbi, Santo R.; and Cantello, Maichi, to G.D. Societa per Azioni. Piercing device for piercing ventilating holes in cigarettes or similar smoking commodities. 4,585,919, Cl. 219-121.0LK.
Mattel, Inc.: *See—*
Stephens, William F., 4,585,166, Cl. 238-10.00R.
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., to VMX, Inc. Electronic audio communication system with user controlled message address. 4,585,906, Cl. 179-18.00B.
Mattisson, Ulf K.: *See—*
Gummesson, Bengt-Ake G.; Holmberg, Bengt M.; Jonsson, Sven A.; and Mattisson, Ulf K., 4,585,552, Cl. 210-87.000.
Matzuk, Terrance, to Dymax Corporation. Tissue signature tracking tranceiver. 4,584,880, Cl. 73-609.000.
Maudsley, Andrew A.; Hilal, Sadek K.; and Simon, Howard E., to Philips Medical Systems, Inc. NMR imaging methods. 4,585,992, Cl. 324-309.000.
Mautz, Karlheinz: *See—*
Schwarz, Alois; and Mautz, Karlheinz, 4,585,394, Cl. 416-138.000.
Maxon Corporation: *See—*
Belknap, James L., 4,585,021, Cl. 137-100.000.
Mayeda, Bruce H.; and Owen, Robert R., to Eversman Mfg. Company, The. Rotary disk tool assembly and implements. 4,585,073, Cl. 172-158.000.
Mayer, Dieter: *See—*
Clement, Albrecht; Mayer, Dieter; and Wild, Ernst, 4,584,982, Cl. 123-489.000.
Mayer, John A.; and Miller, William H., to General Electric Company. Rotor of AC dynamoelectric machine with improved cooling and stability and method of making the same. 4,585,967, Cl. 310-217.000.
Mazda Motor Corporation: *See—*
Nagaoka, Mitsuru; and Oda, Kazuya, 4,584,906, Cl. 74-866.000.
McAvoy, Bruce R.: *See—*
Wonn, James W.; and McAvoy, Bruce R., 4,586,077, Cl. 358-86.000.
McCaully, Ronald J.: *See—*
Winkley, Michael W.; and McCaully, Ronald J., 4,585,879, Cl. 548-491.000.
McClelland, Thomas R., to Westinghouse Electric Corp. Steam turbine restart temperature maintenance system and method. 4,584,836, Cl. 60-646.000.
McComb, Walter D.: *See—*
Schave, Richard D.; McComb, Walter D.; and Rudolph, Andrew W., 4,585,343, Cl. 356-237.000.
McDavid, Larry S.: *See—*
Stillman, Gerald T.; Pawlowski, Michael; and McDavid, Larry S., 4,586,149, Cl. 364-557.000.
McEvoy, John J., to Duracell Inc. Zinc/air cell cathode. 4,585,710, Cl. 429-27.000.
McFadden, Arthur R.: *See—*
Helsley, Grover C.; McFadden, Arthur R.; and Hoffman, David, 4,585,788, Cl. 514-450.000.
McFadden, Joseph T. Universal joint. 4,585,195, Cl. 248-118.000.
McGrail, Thomas W., to Mallinckrodt, Inc. Multi-purpose tracheal tube. 4,584,998, Cl. 128-604.000.
McGuire, Kevin C. Therapeutic aid. 4,585,363, Cl. 401-6.000.
McIntyre, Robert J., to RCA Inc. Avalanche photodetector. 4,586,066, Cl. 357-30.000.
McKinzie, George T. Alarm system. 4,586,028, Cl. 340-500.000.
McMullen, Warren H.; Chessin, Hyman; and Jones, Allen R., to M&T Chemicals Inc. Process for forming adherent chromium electrodeposits from high energy efficient bath on ferrous metal substrates. 4,585,530, Cl. 204-34.000.
McNeilab, Inc.: *See—*
Carson, John R., 4,585,784, Cl. 514-423.000.
McNett, John P.: *See—*
Amici, Francis R.; Berger, Hans S.; and McNett, John P., 4,585,425, Cl. 446-327.000.
Means, Anthony R.: *See—*
Tindall, Donald J.; and Means, Anthony R., 4,585,765, Cl. 514-172.000.
Mecelec: *See—*
Sellier, Christian, 4,585,936, Cl. 250-223.00R.
Mecondor S.p.A.: *See—*
Tosti, Giorgio, 4,584,768, Cl. 29-872.000.
Meiry, Gad M. Modular house construction. 4,584,805, Cl. 52-264.000.
Meisner, Lorraine F.; and Schinitsky, Michael R., to Valcor Scientific, Ltd. Stabilization of proteins and peptides by chemical binding with chondroitin. 4,585,754, Cl. 514-8.000.
Meister, Fred: *See—*
Dluhosch, Kurt; and Meister, Fred, 4,584,973, Cl. 123-56.0BA.
Meistrell, William R., to Dive N' Surf, Inc. Ice-pack retention device. 4,585,003, Cl. 128-402.000.
Meixner, Jurgen; Traenckner, Hans-Joachim; Kremer, Wolfgang; and Muller, Manfred, to Bayer Aktiengesellschaft. Emulsifiable radiation-curable acryloyl-containing polyesters, a process for their preparation and their use. 4,585,828, Cl. 524-604.000.
Melrose, Clayton: *See—*
Anderson, Jack F.; and Melrose, Clayton, 4,585,071, Cl. 172-1.000.
Merck & Co., Inc.: *See—*
Morgan, Evan R.; and Steelman, Sanford L., 4,585,755, Cl. 514-11.000.
Shepard, Kenneth L., 4,585,787, Cl. 514-445.000.
Merk, Heinz: *See—*
Beck, Ernst; Durst, Alfred; Merk, Heinz; Bernhard, Schuler; Wiedenhofer, Kurt; and Wohlgemuth, Werner, 4,584,852, Cl. 66-120.000.
Merkatoris, John R.: *See—*
Bradley, John J.; and Merkatoris, John R., 4,585,507, Cl. 156-461.000.
Merkey, John A.; Uhland, Francis L., Jr.; Campbell, Willis R.; and Bowden, Donald F., Jr., to Sperry Corporation. Drive mechanism for roll baler. 4,584,827, Cl. 56-341.000.
Merrell Dow Pharmaceuticals Inc.: *See—*
Fozard, John R.; and Gittos, Maurice W., 4,585,866, Cl. 546-129.000.
Merrien, Pierre A.: *See—*
Merrien, Pierre L.; and Merrien, Pierre A., 4,585,050, Cl. 164-457.000.
Merrien, Pierre L.; and Merrien, Pierre A., to Etude et Developpement en Metallurgie, E.D.E.M., S.A.R.L. Process for automatic regulation of a casting cycle. 4,585,050, Cl. 164-457.000.

Merritt, George W.: *See—*
Raftis, Spiros G.; and Merritt, George W., 4,585,031, Cl. 137-846.000.
Meryman, Harold T.; Hornblower, Marne; and Syring, Ralph, to American National Red Cross. Prolonged storage of red blood cells. 4,585,735, Cl. 435-2.000.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
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Messershmitt-Boelkow-Blohm Gesellschaft-mit-beschraenkter Haftung: *See—*
Koniger, Max; and Muller, Gerhard, 4,586,069, Cl. 357-30.000.
Messing, Sheldon H.; Gibbs, Marylu B.; and Kott, Alan C., to Dow Chemical Company, The. Process for preparing anion exchange resins by amination of haloalkylated polymers in the presence of metal halide and metal hydroxide. 4,585,800, Cl. 521-31.000.
Meul, Thomas: *See—*
Jolidon, Synese; and Meul, Thomas, 4,585,887, Cl. 560-38.000.
Meyer, Horst: *See—*
Ingendoh, Axel; Meyer, Horst; and Garthoff, Bernward, 4,585,873, Cl. 548-130.000.
Meyer, Rolf-Volker: *See—*
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Schubart, Rudiger, 4,585,856, Cl. 528-388.000.
Meyers, William E.: *See—*
Tice, Thomas R.; Meyers, William E.; Gilley, Richard M.; and Shannon, William M., 4,585,482, Cl. 106-15.050.
Mez Mohelnice narodni podnik: *See—*
Sitta, Jaroslav; Kopka, Karll; Petrik, Frantisek; and Vyjidacek, Kvetoslav, 4,585,049, Cl. 164-324.000.
Mica, Giovanni: *See—*
Saitto, Antonio; and Mica, Giovanni, 4,586,051, Cl. 343-703.000.
Michel, Peter, to Disetronic AG. Portable infusion unit. 4,585,439, Cl. 604-155.000.
Michigan State University: *See—*
Asmussen, Jes; and Reinhard, Donnie K., 4,585,668, Cl. 427-38.000.
Mihalka, Alex M., to United States of America, Energy. Capacitor charging FET switcher with controller to adjust pulse width. 4,586,118, Cl. 363-17.000.
Mihayashi, Keiji: *See—*
Kobayashi, Hidetoshi; and Mihayashi, Keiji, 4,585,731, Cl. 430-543.000.
Miksza, Anthony S., Jr.: *See—*
Failla, Stephen J.; and Miksza, Anthony S., Jr., 4,585,153, Cl. 227-19.000.
Millar, Thomas D., to AHI Operations Limited. Devices which are adapted to slowly release chemicals, such as hormones, drugs and minerals. 4,585,451, Cl. 604-892.000.
Millen, Ernest W., to United States of America, National Aeronautics and Space Administration. Aircraft liftmeter. 4,586,140, Cl. 364-433.000.
Miller, Ann: *See—*
Miller, Ray; and Miller, Ann, 4,585,248, Cl. 280-432.000.
Miller, Dennis P., deceased: *See—*
Nelson, Donald L.; Matijega, Roney J.; and Miller, Dennis P., deceased, 4,585,803, Cl. 521-105.000.
Miller, James D. Apparatus for dampening pump pressure pulsations. 4,585,400, Cl. 417-540.000.
Miller, James F.: *See—*
Ramsey, Mark S.; and Miller, James F., 4,585,287, Cl. 339-60.00C.
Miller, Kenneth L.: *See—*
Brown, Edmund J.; and Miller, Kenneth L., 4,585,929, Cl. 235-449.000.
Miller, Kevin P.: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Luccarelli, Domenick, Jr.; Miller, Kevin P.; and Vock, Manfred H., 4,585,663, Cl. 426-535.000.
Miller, Larry L.; Blankespoor, Ronald L.; and Zinger, Baruch, to University of Minnesota, Regents of the. Electrochemical controlled release drug delivery system. 4,585,652, Cl. 424-83.000.
Miller, Marilyn M., administrator: *See—*
Nelson, Donald L.; Matijega, Roney J.; and Miller, Dennis P., deceased, 4,585,803, Cl. 521-105.000.
Miller, Ray; and Miller, Ann. Anti-jackknife and steering control system. 4,585,248, Cl. 280-432.000.
Miller, Richard L.: *See—*
Baker, David S.; and Miller, Richard L., 4,585,410, Cl. 431-350.000.
Mincone, Raymond; Miller, Richard L.; Vella, Louis C.; and Erike, Bosah, 4,585,904, Cl. 179-7.1TP.
Miller, Roger. Folding rack for trucks. 4,585,264, Cl. 296-3.000.
Miller, Walter J., to Pennwalt Corporation. EMI/RFI vapor deposited composite shielding panel. 4,585,901, Cl. 174-35.0MS.
Miller, William H.: *See—*
Mayer, John A.; and Miller, William H., 4,585,967, Cl. 310-217.000.
Milliken Research Corporation: *See—*
King, Herbert R., 4,584,854, Cl. 68-205.00R.
Mincone, Raymond; Miller, Richard L.; Vella, Louis C.; and Erike, Bosah, to General Telephone Inc. Programmable computerized telephone call cost metering device. 4,585,904, Cl. 179-7.1TP.
Minjolle, Louis; Drouet, Claudette; Lengronne, Bernard; Hordonneau, Alain; and Capdepuy, Bernard, to Ceraver. Method of manufacturing a reinforced composite structure of ceramic material. 4,585,500, Cl. 156-89.000.
Minnesota Mining and Manufacturing Company: *See—*
Archibald, G. Kent, 4,585,441, Cl. 604-245.000.
Schoon, David J., 4,586,057, Cl. 346-108.000.
Vogelgesang, Peter J., 4,586,101, Cl. 360-132.000.
Weigel, David C., 4,585,734, Cl. 430-619.000.
Minnick, Gregory B. Self tuning tail piece for string instruments. 4,584,923, Cl. 84-454.000.
Minoura, Kazuo; and Matsuoka, Kazuhiko, to Canon Kabushiki Kaisha. Scanning optical system having a tilting correcting function. 4,585,296, Cl. 350-6.500.
Mioduszewski, David: *See—*
Bernardin, Frederick E.; Dickinson, William D.; and Mioduszewski, David, 4,585,060, Cl. 166-64.000.
Mioen, Thomas K., to Boliden Aktiebolag. Method for separating and recovering nickel and copper from complex materials. 4,585,477, Cl. 75-117.000.
Mircheva, Vera V.: *See—*
Atanasov, Nikolay A.; Lyutov, Lyudmil G.; Mircheva, Vera V.; and Stefanov, Stefan R., 4,585,531, Cl. 204-49.000.
Misawa, Rintaro; and Takahashi, Kou, to Sunwa Sharyo Manufacturing Co., Ltd. Carrier for rescuing patients. 4,585,241, Cl. 280-5.220.
Miskolczi, John, Jr. Refractory brick ring tightening device. 4,584,812, Cl. 52-749.000.
Missmahl, Bodo: *See—*
Even, Hans-Dieter; Missmahl, Bodo; Redmers, Karl-Heinz; and Rembe, Hubertus, 4,585,168, Cl. 239-74.000.
Mita Industrial Co., Ltd.: *See—*
Koyama, Shigeo; Kozuka, Nobuhiko; and Kano, Atsushi, 4,585,324, Cl. 355-3.00R.
Mitchell, Roger E.: *See—*
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Mitsubishi Chemical Industries, Ltd.: *See—*
Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, 4,585,591, Cl. 260-397.400.
Nitta, Issei; Nakao, Kenichiro; Miyake, Motoyoshi; Maruyama, Akira; and Takashima, Junko, 4,585,766, Cl. 514-180.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujishima, Kazuyasu; Shimotori, Kazuhiro; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,586,167, Cl. 365-189.000.
Fujishima, Kazuyasu, 4,586,171, Cl. 365-205.000.
Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, 4,585,403, Cl. 418-55.000.
Koike, Kazuo; and Kawada, Junji, 4,586,097, Cl. 360-99.000.
Morishita, Etsuo; Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, 4,585,402, Cl. 418-55.000.
Nakagawa, Tsutomu, 4,586,070, Cl. 357-38.000.
Nishida, Mitsuhiro; Yamamoto, Sakuei; and Inao, Hiroshi, 4,585,966, Cl. 310-87.000.
Soyama, Kazuya; Nakamura, Takashi; and Yamaura, Yutaka, 4,584,954, Cl. 112-275.000.
Takagawa, Kiyoshi, 4,586,125, Cl. 364-167.000.
Yorita, Mitsumasa, 4,585,913, Cl. 200-144.00B.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Gaku, Morio; Kimbara, Hidenori; and Ejiri, Mitsuo, 4,585,855, Cl. 528-322.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Danno, Yoshiaki, 4,585,101, Cl. 192-3.310.
Mitsubishi Monsanto Chemical Company: *See—*
Kokubo, Takashi, 4,585,832, Cl. 525-71.000.
Uchida, Minoru; and Ikuma, Sadao, 4,585,824, Cl. 524-494.000.
Mitsubishi Petrochemical Co., Ltd.: *See—*
Okuyama, Katsumi; and Mizutani, Hiroyasu, 4,585,604, Cl. 264-41.000.
Mitsui Toatsu Chemicals, Incorporated: *See—*
Kitagawa, Nobuhisa; Hirose, Masataka; Isogaya, Kazuyoshi; and Ashida, Yoshinori, 4,585,671, Cl. 427-54.100.
Mittaine, Bernard: *See—*
Tivolle, Alain; Roumegoux, Bernard; Delhaye, Gerard; Codur, Yves; and Mittaine, Bernard, 4,584,746, Cl. 29-81.00B.
Mitzel, James W.: *See—*
Hoog, Josef T.; and Mitzel, James W., 4,585,920, Cl. 219-121.0PR.
Mitzelman, Irwin: *See—*
Jaffe, Herbert R.; and Mitzelman, Irwin, 4,585,519, Cl. 156-645.000.
Miura, Isamu. Paper jogging apparatus. 4,585,225, Cl. 271-211.000.
Miura, Masakatsu: *See—*
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,585,103, Cl. 192-4.00A.
Miura, Tanetoshi: *See—*
Kohashi, Makoto; Miura, Tanetoshi; Okabe, Kaoru; and Hamada, Haruo, 4,586,194, Cl. 381-60.000.
Miwa, Tadashi: *See—*
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyosni; Fukuchi, Masakazu; and Ito, Kunio, 4,585,319, Cl. 355-3.00R.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, 4,585,326, Cl. 355-3.0DD.
Miyagawa, Hiroshi: *See—*
Yonahara, Kunio; Miyagawa, Hiroshi; and Aimoto, Shingo, 4,585,578, Cl. 252-511.000.
Miyahira, Hitoshi: *See—*
Ogawa, Shingo; Miyahira, Hitoshi; Sato, Kensaku; Kawamura, Yoshio; Kaida, Hirosi; and Itoh, Yoshizi, 4,584,766, Cl. 29-755.000.
Miyaji, Kenichi; Toida, Shouji; Ito, Seiichi; and Watanabe, Isao, to Nippon Sanso Kabushiki Kaisha. Portable container. 4,585,134, Cl. 215-100.00A.
Miyake, Kiyoshi; Kimura, Shinichiro; and Warabisako, Terunori, to Hitachi, Ltd. Plasma anodization system. 4,585,541, Cl. 204-298.000.

Miyake, Motoyoshi: *See*—
Nitta, Issei; Nakao, Kenichiro; Miyake, Motoyoshi; Maruyama, Akira; and Takashima, Junko, 4,585,766, Cl. 514-180.000.

Miyamoto, Seigo: *See*—
Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, 4,585,573, Cl. 252-70.000.

Miyao, Fumio, to Fuji Xerox Co., Ltd. Method for correction of trouble in digital signal transmission system. 4,586,176, Cl. 370-85.000.

Miyashita, Kunio: *See*—
Hayashida, Hiroshi; Miyashita, Kunio; Takahashi, Tadashi; Morinaga, Shigeki; and Ishizaki, Kosho, 4,586,152, Cl. 364-718.000.

Miyata, Yasuji: *See*—
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.

Miyatake, Hideshi: *See*—
Fujishima, Kazuyasu; Shimotori, Kazuhiro; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,586,167, Cl. 365-189.000.

Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, to UBE Industries, Ltd. Process for producing ethylene glycol and/or glycolic acid ester, catalyst composition used therefor, and process for production thereof. 4,585,890, Cl. 560-179.000.

Miyoshi, Noriomi; Tsuruoka, Michihiko; and Nagumo, Mutsumi, to Fuji Electric Company, Ltd. Karman vortex flowmeter. 4,584,883, Cl. 73-861.240.

Mizuno, Fumio: *See*—
Tunooka, Tutomu; and Mizuno, Fumio, 4,585,745, Cl. 501-135.000.

Mizutani, Hiroyasu: *See*—
Okuyama, Katsumi; and Mizutani, Hiroyasu, 4,585,604, Cl. 264-41.000.

Mobil Oil Corporation: *See*—
Bowes, Emmerson; Farcasiu, Malvina; and Scott, Eric J. Y., 4,585,546, Cl. 208-253.000.
Herrington, Fox J., 4,584,820, Cl. 53-429.000.
Kremer, Ross A.; and Saunders, Stephen W., 4,585,629, Cl. 423-167.000.
Kuhl, Gunter H., 4,585,638, Cl. 423-328.000.
Rubin, Mae K., 4,585,637, Cl. 423-328.000.
Su, Tien-Kuei; and Youngjohn, Norman R., 4,585,817, Cl. 524-108.000.
Szostak, Rosemarie, 4,585,639, Cl. 423-328.000.
Valyocsik, Ernest W., 4,585,746, Cl. 502-62.000.
Valyocsik, Ernest W., 4,585,747, Cl. 502-62.000.

Mochida, Haruo, to Nissan Motor Co., Ltd. Hood locking apparatus. 4,585,258, Cl. 292-125.000.

Molins PLC: *See*—
Doerman, Eryk S., 4,584,870, Cl. 73-40.000.

Molotsky, Hyman M., to CPC International Inc. Starch-based polyether polyols. 4,585,858, Cl. 536-4.100.

Monaco, Mario: *See*—
Hadjiskakis, Constantin; and Monoco, Mario, 4,585,510, Cl. 156-555.000.

Monarch Marking Systems, Inc.: *See*—
Karn, Donald L., 4,584,938, Cl. 101-111.000.

Monden, Tsuneo: *See*—
Ozu, Masao; and Monden, Tsuneo, 4,584,750, Cl. 29-156.40R.

Mones, Steven F.: *See*—
Bartoszek, Edward J.; and Mones, Steven F., 4,585,701, Cl. 428-421.000.

Monne, Maxime; and Adamowski, Andrzej, to Intercontrole Societe Anonyme. Device for positioning a member facing each of the perforations of a perforated plate in accordance with a given grid. 4,585,203, Cl. 248-652.000.

Monoco, Mario: *See*—
Hadjiskakis, Constantin; and Monoco, Mario, 4,585,510, Cl. 156-555.000.

Montedison S.p.A.: *See*—
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Pontevivo, Michele, 4,585,864, Cl. 546-14.000.

Montefluos S.p.A.: *See*—
Strohbach, Hannelore, 4,585,567, Cl. 252-58.000.

Moolenaar, Antonie J.: *See*—
Wanninkhof, Peter; and Moolenaar, Antonie J., 4,584,797, Cl. 51-170.0EB.

Moore, Boyd B.; Vanmeurs, Peter; and Van Egmond, Cor F., to Shell Oil Company. Well treating process for installing a cable bundle containing strands of changing diameter. 4,585,066, Cl. 166-385.000.

Moore, James G. Livestock watering system. 4,584,966, Cl. 119-73.000.

Moore, Michael A., to Dow Chemical Company, The. Containers with attached lid for storage and microwave cooking. 4,585,915, Cl. 219-10.55E.

Morbitzer, Hans P.: *See*—
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,585,250, Cl. 280-618.000.

Morell, Josef: *See*—
Schmidt, Harald; Morell, Josef; Herdin, Gunther; and Freudenschuss, Otto, 4,585,171, Cl. 239-88.000.

Morelli, Francoise J.: *See*—
Vuillet, Alain; and Morelli, Francoise J., 4,585,391, Cl. 415-210.000.

Morgan Construction Company: *See*—
Simmons, Thomas E.; Innis, Charles L.; and DiVirgilio, Ralph F., 4,585,236, Cl. 277-38.000.

Morgan, Evan R.; and Steelman, Sanford L., to Merck & Co., Inc. Cyclic and bridged cyclic somatostatin analogs useful as local anti-inflammatory agents. 4,585,755, Cl. 514-11.000.

Mori, Katsuaki: *See*—
Iio, Tomoyuki; and Mori, Katsuaki, 4,585,105, Cl. 192-70.170.

Mori, Kei. Photoradiator for radiating light. 4,585,298, Cl. 350-96.100.

Mori, Mitsuyoshi, to Kabushiki Kaisha Daikin Seisakusho. Power shift transmission power train having a forward low speed gear train with dual reduction gear set means. 4,584,891, Cl. 74-331.000.

Mori, Shinji: *See*—
Izuchi, Shingo; Yamamoto, Toshimasa; and Mori, Shinji, 4,585,186, Cl. 242-107.40D.

Mori, Yoshikazu; Kojima, Susumu; and Watabe, Masayuki, to Kabushiki Kaisha Nipponcoinco. Bill discriminator. 4,585,125, Cl. 209-534.000.

Morikawa, Tuneo; and Kabe, Kazuyuki, to Yokohama Rubber Co., Ltd., The. Pneumatic tire for passenger car. 4,585,045, Cl. 152-536.000.

Morin, Lee M. E.: *See*—
Ascer, Enrico; Morin, Lee M. E.; and Veith, Frank J., 4,585,010, Cl. 128-673.000.

Morinaga, Akio; Hayashi, Mitsutoshi; and Koga, Motoyuki, to Tokyo Gas Co., Ltd.; and Hakko Co., Ltd. System for repairing joints in pipes laid underground. 4,584,963, Cl. 118-663.000.

Morinaga, Shigeki: *See*—
Hayashida, Hiroshi; Miyashita, Kunio; Takahashi, Tadashi; Morinaga, Shigeki; and Ishizaki, Kosho, 4,586,152, Cl. 364-718.000.

Morinaka, Akira; Oikawa, Shigeru; and Sato, Hirotsugu, to Nippon Telegraph & Telephone Public Corporation. Optical recording media with thermal coloration and process for producing same. 4,585,722, Cl. 430-201.000.

Morisawa, Kunio: *See*—
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,585,103, Cl. 192-4.00A.

Morishita, Etsuo; Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Scroll-type fluid machine with eccentric ring drive mechanism. 4,585,402, Cl. 418-55.000.

Morita, Kiyomi: *See*—
Tanabe, Yoshiyuki; Kashiwaya, Mineo; Morita, Kiyomi; and Kameta, Katsunobu, 4,584,981, Cl. 123-472.000.

Morizot, Gerard: *See*—
Rilly, Gerard; Morizot, Gerard; Lopez, Daniel; and Weisser, Erich, 4,586,016, Cl. 336-96.000.

Mork, Orlan H. Soil leveling apparatus with improved frame and hitch. 4,585,075, Cl. 172-197.000.

Morphore Ltd.: *See*—
Burt, Michael; Kent, Eli; and Grasman, Ami, 4,584,800, Cl. 52-63.000.

Morris, George E.; Nay, Barry; and Stewart, David G., to British Petroleum Company P.L.C., The. Catalyst composition, method for its production and its use in the production of hydrocarbons from synthesis gas. 4,585,799, Cl. 518-717.000.

Morris, George E., to British Petroleum Company P.L.C., The. Process for the production of dihydrocarbyl oxalates. 4,585,891, Cl. 560-204.000.

Morrison, Howard J.: *See*—
Rasmussen, Russell G.; Jaworski, Eugene; and Morrison, Howard J., 4,585,426, Cl. 446-428.000.

Moser, Karl: *See*—
Moser, Kurt; and Moser, Karl, 4,585,328, Cl. 355-3.0DD.

Moser, Kurt; and Moser, Karl, to Develop Dr. Eisbein GmbH & Co. Developing apparatus for a photocopying machine. 4,585,328, Cl. 355-3.0DD.

Mosher, Carol W.; Tong, George L.; and Acton, Edward M., to SRI International. Analogues of morpholinyl daunorubicin and morpholinyl doxorubicin. 4,585,859, Cl. 536-6.400.

Mosher, Paul V., to Hitco. Resoles containing zirconium metal atoms. 4,585,837, Cl. 525-506.000.

Mostosi, Angelo, to SACE S.p.A. Costruzioni Elettromeccaniche. Current-limiter electric switch having a telecontrol suitable for a very high number of switching operations. 4,586,011, Cl. 335-6.000.

Motoki, Kiyozi: *See*—
Kurata, Kazuyuki; Motoki, Kiyozi; and Yamada, Yoshihiro, 4,586,156, Cl. 364-900.000.

Motorola, Inc.: *See*—
Adlhoch, Richard H.; and Ward, James, 4,586,168, Cl. 365-189.000.
Baskett, Ira E.; and Petty, Cleon, 4,585,959, Cl. 307-473.000.
Brown, Leland T., 4,585,905, Cl. 179-16.0AA.
Ooms, William J., 4,585,957, Cl. 307-455.000.
Stemple, Donald K., 4,585,517, Cl. 156-643.000.
Wurzburg, Henry, 4,585,951, Cl. 307-228.000.

Motorola Information Systems Limited: *See*—
Thomson, Malcolm G., 4,586,023, Cl. 340-347.0DD.

Mourier, Georges, to Thomson-CSF. Radio electric wave generator for ultra-high frequencies. 4,585,965, Cl. 315-39.300.

Mourrier, Francis; and Badaut, Roger, to Creusot Loire. Swash plate mechanism, particularly for a pump drive. 4,584,927, Cl. 92-71.000.

Mueller, Francis X., Jr.: *See*—
Johnson, Timothy W.; and Mueller, Francis X., Jr., 4,585,700, Cl. 428-419.000.

Mueller, Herbert, to BASF Aktiengesellschaft. Reducing the content of oligomeric cyclic ethers in polyoxybutylene polyoxyalkylene glycols. 4,585,592, Cl. 260-408.000.

Mullenhoff, Donald J.; and Wilson, Stephen W., to United States of America, Energy. Route profile analysis system and method. 4,586,138, Cl. 364-424.000.

Muller, Alfred: *See—*
Eschrich, Gerhard; Muller, Alfred; Sauer, Joseph; and Schreiber, Achim, 4,584,905, Cl. 74-861.000.

Muller, Gerhard: *See—*
Koniger, Max; and Muller, Gerhard, 4,586,069, Cl. 357-30.000.

Muller, Hans, to Grapha-Holding AG. Apparatus for subdividing a stream of partially overlapping paper sheets. 4,585,227, Cl. 271-270.000.

Muller, Manfred: *See—*
Meixner, Jurgen; Traenckner, Hans-Joachim; Kremer, Wolfgang; and Muller, Manfred, 4,585,828, Cl. 524-604.000.

Muller, Marcel: *See—*
Alig, Leo; and Muller, Marcel, 4,585,796, Cl. 514-620.000.

Muller, Robert K.: *See—*
Bernhard, Kurt; Muller, Robert K.; and Spruijtenburg, Robert, 4,585,885, Cl. 556-436.000.

Muller, Willi: *See—*
Haas, Wolfgang; Muller, Willi; Schacht, Hans; and Scholz, Erich, 4,585,022, Cl. 137-172.000.

Munker, Jurgen F. F.: *See—*
Germann, Albrecht J.; Munker, Jurgen F. F.; and Wieland, Erich G., 4,584,940, Cl. 101-350.000.

Munroe, Ronald G., to Eagle Electric Mfg. Co., Inc. Push-in electrical wire connector. 4,585,902, Cl. 174-87.000.

Munzer, Manfred: *See—*
Jung, Karl A.; Jakob, Karl-Heinz; Munzer, Manfred; and Wopker, Wilhelm, 4,585,818, Cl. 524-120.000.

Murai, Masao, to NEC Corporation. Bit pattern check circuit. 4,586,162, Cl. 365-51.000.

Muralidhara, Ranya: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Luccarelli, Domenick, Jr.; Miller, Kevin P.; and Vock, Manfred H., 4,585,663, Cl. 426-535.000.

Muramatsu, Hiromochi: *See—*
Watanabe, Atsushi; and Muramatsu, Hiromochi, 4,585,717, Cl. 429-213.000.

Murase, Satoru: *See—*
Koizumi, Misao; and Murase, Satoru, 4,586,012, Cl. 335-216.000.

Murata Manufacturing Co., Ltd.: *See—*
Konoike, Takehiro; and Tamura, Hiroshi, 4,585,744, Cl. 501-135.000.
Yamamoto, Takashi, 4,586,110, Cl. 361-307.000.

Murohoshi, Takanori: *See—*
Yoshioka, Takatoshi; Kirihara, Seishin; Siga, Masao; Kuriyama, Mitsuo; Yoshida, Takehiko; and Murohoshi, Takanori, 4,585,478, Cl. 75-124.000.

Murphy, Bernard T.: *See—*
Hartman, Adrian R.; Murphy, Bernard T.; Riley, Terence J.; and Shackle, Peter W., 4,586,073, Cl. 357-45.000.

Murphy, Hugh J., to Rockwell International Corporation. Largest amplitude transient detector. 4,585,990, Cl. 324-102.000.

Murray, Thomas L., Jr.; Yu, Kin C.; and Holtey, Thomas O., to Honeywell Information Systems Inc. Apparatus and method for testing and verifying the timing logic of a cathode ray tube display. 4,586,129, Cl. 364-200.000.

Murty, Russell G.: *See—*
Higgs, Derek J.; Murty, Russell G.; and Robins, Alan, 4,585,273, Cl. 297-452.000.

Musselmann, Walter; and Valdiva, Juan, to J. M. Voith GmbH. Rotor for sorting apparatus for cleaning fibrous suspensions. 4,585,551, Cl. 209-379.000.

Mutzabaugh, Dennis M.: *See—*
Citta, Richard W.; Sgrignoli, Gary J.; and Mutzabaugh, Dennis M., 4,586,078, Cl. 358-86.000.

MZW Maschinenfabrik GmbH: *See—*
Schmidt, Erich, 4,585,043, Cl. 144-218.000.

Naarmann, Herbert: *See—*
Puetter, Hermann; Naarmann, Herbert; and Penzien, Klaus, 4,585,536, Cl. 204-182.300.

Nabisco Brands, Inc.: *See—*
Karwowski, Jan; Bangert, James G.; Ferraro, Robert F.; and Brede, Patricia M., 4,585,657, Cl. 426-285.000.

Naef, Reto: *See—*
Seebach, Dieter; and Naef, Reto, 4,585,892, Cl. 562-443.000.

Nagai, Norimichi; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, to Toda Kogyo Corp. Plate-like barium ferrite particles for magnetic recording and process for producing the same. 4,585,568, Cl. 252-62.590.

Nagakura, Hideo: *See—*
Watanabe, Masao; Nagakura, Hideo; and Yanagisawa, Taminori, 4,585,389, Cl. 414-752.000.

Naganuma, Yoshiaki: *See—*
Anzai, Kenji; Hamabe, Tatsuo; Watanabe, Ichiro; and Naganuma, Yoshiaki, 4,585,698, Cl. 428-413.000.

Nagao, Taku: *See—*
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,585,768, Cl. 514-211.000.

Nagaoka, Mitsuru; and Oda, Kazuya, to Mazda Motor Corporation. Gear shift control for an automatic transmission of a vehicle. 4,584,906, Cl. 74-866.000.

Nagatome, Yoshiaki: *See—*
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,585,665, Cl. 426-634.000.

Nagayama, Kazuhiko; Masuda, Masami; and Maeda, Yukio, to Hitachi, Ltd. Precision positioning device. 4,585,379, Cl. 409-147.000.

Nagayama, Masaaki: *See—*
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.

Nagel, Arthur A., to Pfizer inc. Antibacterial derivatives of a neutral macrolide. 4,585,759, Cl. 514-29.000.

Nagel, Dieter H., to Heinz Plastic Mold Co. Improved method and apparatus for blow molding in a single blow molding operation a controlled drop bottle. 4,584,823, Cl. 53-453.000.

Nagumo, Mutsumi: *See—*
Miyoshi, Noriomi; Tsuruoka, Michihiko; and Nagumo, Mutsumi, 4,584,883, Cl. 73-861.240.

Naiman, Mark L.: *See—*
Raffel, Jack I.; Yasaitis, John A.; Chapman, Glenn H.; and Naiman, Mark L., 4,585,490, Cl. 148-1.500.

Naito, Tsutomu, to NT Tool Kabushikikaisha. Tool attaching device in a machine tool. 4,585,380, Cl. 409-234.000.

Nakagawa, Kazuyuki: *See—*
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,585,774, Cl. 514-255.000.

Nakagawa, Shigeru: *See—*
Kidera, Kenji; Nakagawa, Shigeru; Takeda, Takashi; Omori, Katsumi; and Okuma, Toshiyuki, 4,585,681, Cl. 428-36.000.

Nakagawa, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Thyristor with abrupt anode emitter junction. 4,586,070, Cl. 357-38.000.

Nakagawa, Yoshiki: *See—*
Fujita, Keiichi; Nakauchi, Hiroshi; Kita, Tatsuo; Nakagawa, Yoshiki; and Maeda, Terunobu, 4,585,486, Cl. 106-86.000.

Nakai, Hideyuki, to Sanyo Electric Co., Ltd. Switching regulator. 4,585,988, Cl. 323-285.000.

Nakajima, Hideki: *See—*
Sato, Jun; and Nakajima, Hideki, 4,585,188, Cl. 242-219.000.

Nakajima, Hiromichi: *See—*
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,585,768, Cl. 514-211.000.

Nakajima, Tadakatsu: *See—*
Nakayama, Wataru; Daikoku, Takahiro; Nakajima, Tadakatsu; Kuwahara, Heikichi; and Yasukawa, Akira, 4,585,055, Cl. 165-115.000.

Nakamachi, Ichiro: *See—*
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.

Nakamine, Chosin, to Tokyo Shibaura Denki Kabushiki Kaisha. Color coded copier display. 4,586,034, Cl. 340-679.000.

Nakamura, Hiroshi; Kaminishi, Katsuzo; Nonaka, Toshio; and Ishida, Toshimasa, to Oki Electric Industry Co., Ltd. Schottky barrier gate FET including tungsten-aluminum alloy. 4,586,063, Cl. 357-22.000.

Nakamura, Kousuke: *See—*
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.

Nakamura, Masaki; Kitamura, Shigehiro; Abe, Takao; and Komamura, Tawara, to Konishiroku Photo Industry Co., Ltd. Thermographic transfer recording medium. 4,585,688, Cl. 428-200.000.

Nakamura, Takashi: *See—*
Soyama, Kazuya; Nakamura, Takashi; and Yamaura, Yutaka, 4,584,954, Cl. 112-275.000.

Nakamura, Toshiyuki: *See—*
Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, 4,585,403, Cl. 418-55.000.
Morishita, Etsuo; Inaba, Tsutomu; Nakamura, Toshiyuki; and Kimura, Tadashi, 4,585,402, Cl. 418-55.000.

Nakamura, Yasuo: *See—*
Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,585,890, Cl. 560-179.000.

Nakamura, Yoshinori: *See—*
Furuta, Katsuhisa; Nakamura, Yoshinori; and Asaka, Kazuhiko, 4,585,603, Cl. 264-40.600.

Nakano, Yasuo: *See—*
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.

Nakao, Kenichiro: *See—*
Nitta, Issei; Nakao, Kenichiro; Miyake, Motoyoshi; Maruyama, Akira; and Takashima, Junko, 4,585,766, Cl. 514-180.000.

Nakatani, Yasutaka; and Kuryu, Isamu, to Fujitsu Limited. Bipolar transistor with meshed emitter. 4,586,072, Cl. 357-34.000.

Nakauchi, Hiroshi: *See—*
Fujita, Keiichi; Nakauchi, Hiroshi; Kita, Tatsuo; Nakagawa, Yoshiki; and Maeda, Terunobu, 4,585,486, Cl. 106-86.000.

Nakayama, Takehisa; Nishimura, Kunio; Tsuge, Kazunori; and Tawada, Yoshihisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for producing continuous insulated metallic substrate. 4,585,537, Cl. 204-192.00D.

Nakayama, Wataru; Daikoku, Takahiro; Nakajima, Tadakatsu; Kuwahara, Heikichi; and Yasukawa, Akira, to Hitachi, Ltd. Liquid film evaporation type heat exchanger. 4,585,055, Cl. 165-115.000.

Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, to Matsushita Electric Industrial Co., Ltd.; and Matsushita Graphic Communication Systems, Inc. Image processor. 4,586,089, Cl. 358-280.000.

Nakoussi, Keiko: *See*—
Haruta, Masahiro; Nakousai, Tadayuki; Iwata, Kazuo; and Nakousai, Keiko, 4,585,484, Cl. 106-22.000.

Nakoussi, Tadayuki: *See*—
Haruta, Masahiro; Nakousai, Tadayuki; Iwata, Kazuo; and Nakousai, Keiko, 4,585,484, Cl. 106-22.000.

Namiki, Takayuki: *See*—
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,585,762, Cl. 514-129.000.

Narasimhan, Kalatur S. V. L.; and Dulis, Edward J., to Crucible Materials Corporation. Method for making rare-earth element containing permanent magnets. 4,585,473, Cl. 75-0.50C.

Naruo, Noboru; and Kawanishi, Hidekata, to Matsushita Electric Industrial Company, Limited. Sheathed resistance heater. 4,586,020, Cl. 338-238.000.

National Machinery Co.: *See*—
Haines, Allan D., 4,584,744, Cl. 29-33.00K.
Payne, George T., 4,585,421, Cl. 445-7.000.

National Nuclear Corporation Limited: *See*—
Bradley, Norman, 4,584,888, Cl. 73-863.820.

National Research Development Corp.: *See*—
Hider, Robert C.; Kontoghiorghes, George; and Silver, Jack, 4,585,780, Cl. 514-348.000.
Woodfield, Alan A., 4,585,341, Cl. 356-28.500.

Nause, Earl E.: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,585,562, Cl. 210-805.000.

Nausedas, Joseph A., to Union Carbide Corporation. Shirred casing stick article with end closure displaced within stick bore. 4,585,680, Cl. 428-36.000.

Nawa, Motoyuki: *See*—
Sugawara, Norio; and Nawa, Motoyuki, 4,585,177, Cl. 239-590.000.

Nay, Barry: *See*—
Morris, George E.; Nay, Barry; and Stewart, David G., 4,585,799, Cl. 518-717.000.

NCR Corporation: *See*—
Granzow, Robert H.; Horst, William R.; Hale, William J.; and Saunders, Ralph B., 4,585,144, Cl. 221-7.000.

NDM Corporation: *See*—
Cartmell, James V., 4,584,962, Cl. 118-43.000.

Nebelung, Hermann H., to Emhart Industries, Inc. Support for a mould portion of a glassware forming machine. 4,585,469, Cl. 65-359.000.

NEC Corporation: *See*—
Kuroda, Takao; and Shimizu, Ryuji, 4,586,050, Cl. 343-426.000.
Murai, Masao, 4,586,162, Cl. 365-51.000.
Okazawa, Takeshi, 4,584,760, Cl. 29-571.000.

Nedelec, Lucien: *See*—
Frechet, Daniel; Nedelec, Lucien; Plassard, Guy; and Brown, Neil L., 4,585,770, Cl. 514-214.000.

Nee, Claude: *See*—
Pathe, Claude; Darmois, Jean; and Nee, Claude, 4,585,713, Cl. 429-112.000.

Needham, James G.: *See*—
Bult, Roelof P.; Schroeder, Ted E.; and Needham, James G., 4,585,511, Cl. 156-607.000.

Neeff, Harry B. Method and apparatus for proving and factoring a meter stack. 4,584,864, Cl. 73-3.000.

Neeff, Rutger: *See*—
Blunck, Martin; Claussen, Uwer; and Neeff, Rutger, 4,585,574, Cl. 252-299.100.

Negev Phosphates Ltd.: *See*—
Iosef, Alexander; Bar-on, Menachem; Oren, Jacob; and Kellerman, Dagobert, 4,585,636, Cl. 423-321.00S.

Negoro, Ikuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens frame holding device. 4,585,308, Cl. 350-252.000.

Neilson, Keith J.: *See*—
Petersdorff, George D.; Neilson, Keith J.; and Curls, Jimmie L., 4,584,856, Cl. 70-57.000.

Neiman S.A.: *See*—
Weber, Gunter, 4,584,857, Cl. 70-184.000.

Neitz, Alfred; and Held, Wolfgang, to Maschinenfabrik Augsburg-Nurnberg. Evaporative cooling system for internal combustion engines. 4,584,971, Cl. 123-41.210.

Nelson, Charles R., to Imperial Chemical Industries PLC. Bleaching compositions. 4,585,570, Cl. 252-102.000.

Nelson, Donald L.; Matijega, Roney J.; and Miller, Dennis P., deceased (by Miller, Marilyn M., administrator), to Dow Chemical Company, The. Internal mold release compositions. 4,585,803, Cl. 521-105.000.

Nelson, Ronald E. Wrist brace. 4,584,993, Cl. 128-77.000.

Neri, Armando: *See*—
Mattei, Riccardo; Neri, Armando; Gobbi, Santo R.; and Cantello, Maichi, 4,585,919, Cl. 219-121.0LK.

Neukomm, Hans R., to U.S. Philips Corporation. MNOS memory cell without sidewalk. 4,586,065, Cl. 357-23.500.

Neumann, Don B.; and Eddy, Richard P., to Excellon Industries. Surface deviation compensation for a beam scanning system. 4,585,938, Cl. 250-235.000.

Newberry, Thomas E., Jr.; Uhrmacher, Ralph R.; and Arblaster, Robert K., to White Laboratories, Inc. Skin lubricating cosmetic composition. 4,585,650, Cl. 424-73.000.

Neyer, Jean-Marie: *See*—
Bujadoux, Karel; and Neyer, Jean-Marie, 4,585,839, Cl. 526-114.000.

NGK Insulators, Ltd.: *See*—
Mase, Syunzo; and Soejima, Shigeo, 4,585,499, Cl. 156-89.000.

NGK Spark Plug Co.: *See*—
Tunooka, Tutomu; and Mizuno, Fumio, 4,585,745, Cl. 501-135.000.

NGK Spark Plug Co., Ltd.: *See*—
Kawamura, Mitsuyoshi; and Ishida, Noboru, 4,585,396, Cl. 416-241.00B.

Nicholson, G. W. Method and apparatus for cleaning coal. 4,585,547, Cl. 209-3.000.

Nicholson, Terence P. Channeled ring seals with spring rings. 4,585,238, Cl. 277-205.000.

Nicholson, Terence P. Channeled ring seals with spring rings. 4,585,239, Cl. 277-205.000.

Nickolaus, Roger B.: *See*—
Crandall, Robert E.; and Nickolaus, Roger B., 4,584,936, Cl. 100-118.000.

Nickols, Paul G. Bicycle braking indicator light assembly. 4,586,021, Cl. 340-134.000.

Nidra Holding S.A.: *See*—
Barata, Jose M. B., 4,585,404, Cl. 418-61.00R.

Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See*—
Ohashi, Shigeo; and Fujita, Yasushi, 4,585,914, Cl. 200-284.000.

Nihon Kogyo Kabushiki Kaisha: *See*—
Oda, Osamu; Onozuka, Arata; and Koyama, Akio, 4,585,621, Cl. 420-579.000.

Niiro, Makoto: *See*—
Fukuju, Yukio; and Niiro, Makoto, 4,586,093, Cl. 360-73.000.

Nikomarov, Samuil S.: *See*—
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.

Nippon Air Brake Co., Ltd.: *See*—
Doto, Shigeaki, 4,585,279, Cl. 303-22.00R.

Nippon Elanco Kabushiki Kaisha: *See*—
Yamamoto, Taizo; and Konishi, Hirokazu, 4,584,817, Cl. 53-329.000.

Nippon Furnace Kogyo Co., Ltd.: *See*—
Hirose, Yasuo, 4,585,463, Cl. 48-111.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Kamiya, Maki, 4,584,922, Cl. 84-1.010.
Wachi, Masatada, 4,584,921, Cl. 84-1.010.

Nippon Kokan Kabushiki Kaisha: *See*—
Tohmata, Eisuke; Takahashi, Ryoichiro; Sonoda, Sakae; Okamoto, Shoji; and Furuyama, Osamu, 4,585,564, Cl. 252-32.500.

Nippon Mektron Ltd.: *See*—
Matsumoto, Hirofumi, 4,585,528, Cl. 204-15.000.

Nippon Paint Co., Ltd.: *See*—
Ito, Yoshito, 4,585,148, Cl. 222-77.000.

Nippon Sanso Kabushiki Kaisha: *See*—
Miyaji, Kenichi; Toida, Shouji; Ito, Seiichi; and Watanabe, Isao, 4,585,134, Cl. 215-100.00A.

Nippon Stainless Steel Co., Ltd.: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.

Nippon Telegraph & Telephone Public Corporation: *See*—
Morinaka, Akira; Oikawa, Shigeru; and Sato, Hirotsugu, 4,585,722, Cl. 430-201.000.

Nippondenso Co., Ltd.: *See*—
Sasaki, Kiyotaka; Tachi, Ryosuke; and Iwamoto, Katsunori, 4,584,978, Cl. 123-417.000.
Watanabe, Atsushi; and Muramatsu, Hiromochi, 4,585,717, Cl. 429-213.000.

Nishi, Tetsuro, to Kabushiki Kaisha Daikin Seisakusho. Blade fastening structure for torque converter or fluid coupling. 4,584,835, Cl. 60-330.000.

Nishibori, Toshiki; Kita, Sumio; and Kamada, Hiroshi, to Sharp Kabushiki Kaisha. Sheet paper attracting system. 4,585,222, Cl. 271-106.000.

Nishida, Mitsuhiro; Yamamoto, Sakuei; and Inao, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Submerged electric motor. 4,585,966, Cl. 310-87.000.

Nishiguchi, Yuzuru, to Shinko Denshi Company Ltd. Mechanism for detecting load. 4,585,083, Cl. 177-229.000.

Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Creep prevention apparatus for car equipped with automatic transmission. 4,584,908, Cl. 74-866.000.

Nishikawa, Yoichi: *See*—
Tsuji, Yoshihiro; Fujihara, Fumio; and Nishikawa, Yoichi, 4,585,179, Cl. 241-101.700.

Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, to Hitachi Chemical Co., Ltd.; Nissan Motor Co., Ltd.; and Atsugi Motor Parts Co., Ltd. Friction material with flame sprayed metal coating. 4,585,691, Cl. 428-311.100.

Nishimura, Kunio: *See*—
Nakayama, Takehisa; Nishimura, Kunio; Tsuge, Kazunori; and Tawada, Yoshihisa, 4,585,537, Cl. 204-192.00D.

Nishimura, Satoshi, to Sanyo Electric Co., Ltd. Sound signal processing apparatus. 4,586,191, Cl. 381-31.000.

Nishimura, Tsunehiko: *See*—
Taguchi, Hiroshi; Nishimura, Tsunehiko; and Kobayashi, Nobuo, 4,585,703, Cl. 428-446.000.

Nishimura, Yuji: *See*—
Kawaguchi, Teruhiko; Fujiwara, Akinori; and Nishimura, Yuji, 4,585,184, Cl. 242-107.000.

Nishioka, Kimihiko; and Kimura, Hiroyuki, to Olympus Optical Co., Ltd. Illumination apparatus for endoscope. 4,584,988, Cl. 128-6.000.
Nissan Motor Co., Ltd.: *See*—
Abo, Keiju; Kumura, Haruyoshi; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,584,909, Cl. 74-868.000.
Aoyama, Shunichi; and Kato, Manabu, 4,584,974, Cl. 123-90.160.
Chikaraishi, Takayo; and Yui, Yasuo, 4,585,257, Cl. 292-1.000.
Hiraiwa, Kazuyoshi; and Kawaguchi, Akio, 4,584,892, Cl. 74-339.000.
Masuda, Joji, 4,584,900, Cl. 74-552.000.
Mochida, Haruo, 4,585,258, Cl. 292-125.000.
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, 4,586,032, Cl. 340-576.000.
Sugano, Kazuhiko, 4,585,100, Cl. 192-3.310.
Sugano, Kazuhiko, 4,585,102, Cl. 192-3.310.
Nitert, Gerhardus L.: *See*—
Has, Peter V.; Lammers, Arend J. W.; and Nitert, Gerhardus L., 4,585,911, Cl. 200-61.530.
Nitsch, Wilhelm; Kieslich, Walter; and Treiber, Helmut, to Agfa-Gevaert AG. Photographic copying apparatus. 4,585,338, Cl. 355-56.000.
Nitta, Issei; Fujimori, Shinichiro; Haruyama, Toshio; and Inoue, Shinya, to Mitsubishi Chemical Industries, Ltd. 17β-ethynylsteroids and process for preparing same. 4,585,591, Cl. 260-397.400.
Nitta, Issei; Nakao, Kenichiro; Miyake, Motoyoshi; Maruyama, Akira; and Takashima, Junko, to Mitsubishi Chemical Industries Ltd. 6-oxygenated corticoid 17α-carbonates and process for production thereof. 4,585,766, Cl. 514-180.000.
Niwa, Takao; Gono, Takeshi; and Osansi, Akinori, to Toyota Jidosha Kabushiki Kaisha. Method for controlling a rate of changing an RPM ratio in a continuously variable transmission. 4,584,907, Cl. 74-866.000.
Nonaka, Toshio: *See*—
Nakamura, Hiroshi; Kaminishi, Katsuzo; Nonaka, Toshio; and Ishida, Toshimasa, 4,586,063, Cl. 357-22.000.
Nonomura, Keisaku; Funada, Fumiaki; and Matsuura, Masataka, to Sharp Kabushiki Kaisha. Liquid crystal display device and method for driving thereof. 4,586,039, Cl. 340-784.000.
Norland Corporation: *See*—
Belt, Kenneth W., 4,585,001, Cl. 128-419.0PG.
Noro, Takanobu: *See*—
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, 4,586,143, Cl. 364-509.000.
Norstedt, Bertil E., to International Business Machines Corp. Computer network system and its use for information unit transmission. 4,586,134, Cl. 364-200.000.
Norsworthy, John P.: *See*—
Gaudenzi, Gene J.; Norsworthy, John P.; Phan, Nghia V.; and Reedy, Dennis C., 4,585,953, Cl. 307-270.000.
North American Philips Corporation: *See*—
Stupp, Edward H.; and Fellows, Mark W., 4,585,974, Cl. 315-307.000.
North American Sports Training Corporation: *See*—
Olson, Scott B., 4,585,228, Cl. 272-119.000.
Northern Telecom Limited: *See*—
Bedard, Charles J.; Jain, Prem C.; and Wood, Samuel F., 4,586,175, Cl. 370-85.000.
Northway, Herbert S.; and Tattam, Norman, to Imperial Chemical Industries PLC. Electrolytic cell. 4,585,527, Cl. 204-1.00R.
Northwestern University: *See*—
Goldberg, Erwin; and Wheat, Thomas E., 4,585,587, Cl. 260-112.50R.
Norton Company: *See*—
Oscarsson, Rolf A., 4,585,056, Cl. 165-133.000.
Norton, Jack R., to Lear Siegler, Inc. Seal for coupling or valve assemblies. 4,585,026, Cl. 137-512.100.
Noschese, Rocco J., to Burndy Corporation. Dual-in-line connector assembly. 4,585,291, Cl. 339-117.00R.
Noshay, Allen: *See*—
Gross, Laurence H.; and Noshay, Allen, 4,585,840, Cl. 526-159.000.
Nourse, John G.; Bourneuf, John J.; and Abbott, David R., to General Electric Company. Gas turbine engine blade. 4,585,395, Cl. 416-223.00A.
Novatome: *See*—
Pierrey, Jean-Louis, 4,585,058, Cl. 165-135.000.
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, to TMC Corporation. Release ski binding. 4,585,250, Cl. 280-618.000.
Nowlin, Oscar D.: *See*—
Pierce, Dale E.; Vaughan, Jerry L.; and Nowlin, Oscar D., 4,585,749, Cl. 502-107.000.
Nozawa, Ryoichiro; Kawamura, Hideaki; and Matsuura, Shuji, to Fanuc Ltd. Numerical-controlled machine tool. 4,585,377, Cl. 409-2.000.
NSK-Warner K.K.: *See*—
Ueda, Takeo, 4,585,185, Cl. 242-107.000.
NT Tool Kabushikikaisha: *See*—
Naito, Tsutomu, 4,585,380, Cl. 409-234.000.
Nuffer, Daniel E.: *See*—
Beck, Boyd R.; Stewart, LaMar H.; Tapp, Steven L.; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,585,522, Cl. 202-181.000.
Nyi, Lawrence S.: *See*—
West, Daniel A.; and Nyi, Lawrence S., 4,585,361, Cl. 400-124.000.
Obayashi, Toshio, to Somar Corporation. Automatic laminator. 4,585,509, Cl. 156-497.000.
O'Berry, William A.: *See*—
Pringle, Robert D.; and O'Berry, William A., 4,586,046, Cl. 343-18.00E.
Obray, Dean C.: *See*—
Cota, Albert O.; and Obray, Dean C., 4,586,142, Cl. 364-507.000.
Occidental Chemical Corporation: *See*—
Bommaraju, Tilak V.; Hauck, William V.; and Lloyd, Vernon J., 4,585,579, Cl. 252-387.000.
Oce-Andeno B.V.: *See*—
Houbiers, Joannes P. M., 4,585,595, Cl. 558-255.000.
Oce-Nederland B.V.: *See*—
Ritzerfeld, Willem G. J.; and Eertink, Bastiaan B. B., 4,585,352, Cl. 356-444.000.
O'Connor, Rodney J., to Texas Romec, Inc. Liquid dispensing comb. 4,585,018, Cl. 132-120.000.
Oda, Kazuya: *See*—
Nagaoka, Mitsuru; and Oda, Kazuya, 4,584,906, Cl. 74-866.000.
Oda, Osamu; Onozuka, Arata; and Koyama, Akio, to Nihon Kogyo Kabushiki Kaisha. Vapor-deposited film of selenium or selenium alloy for electrophotography. 4,585,621, Cl. 420-579.000.
O'Fee, Robert P.: *See*—
DeBergalis, Michael; and O'Fee, Robert P., 4,585,693, Cl. 428-324.000.
Ogasawara, Makoto; and Funahashi, Kazutoshi, to Agency of Industrial Science and Technology. Electrically conductive polypyrrole article. 4,585,695, Cl. 428-364.000.
Ogata, Kazuo. Homogenizer. 4,585,357, Cl. 366-176.000.
Ogawa, Hidenori: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,585,774, Cl. 514-255.000.
Ogawa, Shingo; Miyahira, Hitoshi; Sato, Kensaku; Kawamura, Yoshio; Kaida, Hirosi; and Itoh, Yoshizi, to Hirose Electric Co., Ltd.; and Hitachi, Limited. Apparatus for connection of multicore cable. 4,584,766, Cl. 29-755.000.
Ogawa, Tetsuya: *See*—
Sugimori, Shigeru; Isoyama, Toyoshiro; Goto, Yasuyuki; and Ogawa, Tetsuya, 4,585,575, Cl. 252-299.610.
Ogihara, Satoru: *See*—
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.
Ogisu, Yasuhiko, to Toyoda Gosei Co., Ltd. Plasma treating apparatus. 4,584,965, Cl. 118-730.000.
Ogle, Peter C.: *See*—
Hibyan, Edward S.; Toner, Thomas J.; and Ogle, Peter C., 4,585,393, Cl. 416-134.00A.
Oguchi, Toshihiko: *See*—
Kato, Hirohisa; Oguchi, Toshihiko; and Doki, Yuji, 4,585,697, Cl. 428-403.000.
Oh-ishi, Tokuro: *See*—
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,585,768, Cl. 514-211.000.
Ohashi, Shigeo; and Fujita, Yasushi, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Miniature push-button switch. 4,585,914, Cl. 200-284.000.
Ohkoshi, Tokio: *See*—
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.
Ohman, Thor, to Graber Industries, Inc. Drapery support with snap-in pendant and pendant retainer clip. 4,584,737, Cl. 16-87.40R.
Ohmi, Masatoshi; and Amano, Junkichi, to Yamaha Hatsudoki Kabushiki Kaisha. Oil drain arrangement for internal combustion engine. 4,584,975, Cl. 123-90.380.
Ohmori, Akira; Tomihashi, Nobuyuki; and Ihara, Kiyohiko, to Daikin Kogyo Co. Ltd. Optical materials. 4,585,306, Cl. 350-96.340.
Ohmura, Fusaji: *See*—
Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, 4,585,028, Cl. 137-625.480.
Ohno, Shigeru: *See*—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,719, Cl. 430-59.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,720, Cl. 430-57.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,721, Cl. 430-84.000.
Ohnuki, Yukihiko: *See*—
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,719, Cl. 430-59.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,720, Cl. 430-57.000.
Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, 4,585,721, Cl. 430-84.000.
Ohta, Tatsuo; and Komatsu, Katsuaki, to Konishiroku Photo Industry Co., Ltd. Transparent conductive optical device and a process for the production thereof. 4,585,689, Cl. 428-216.000.
Ohtake, Yasuhisa, to Kabushiki Kaisha Toshiba. Method of manufacturing shadow mask. 4,585,518, Cl. 156-644.000.
Ohzeki, Yoshiaki, to Ricoh Company, Ltd. Facsimile communication relay system. 4,586,086, Cl. 358-256.000.

Oikawa, Shigeru: *See*—
Morinaka, Akira; Oikawa, Shigeru; and Sato, Hirotsugu, 4,585,722, Cl. 430-201.000.
Okabe, Kaoru: *See*—
Kohashi, Makoto; Miura, Tanetoshi; Okabe, Kaoru; and Hamada, Haruo, 4,586,194, Cl. 381-60.000.
Okada, Akira: *See*—
Matsunaga, Hideki; Hirate, Naoyuki; and Okada, Akira, 4,584,886, Cl. 73-863.000.
Okada, Hachiro; and Ono, Kenzi, to Toyota Jidosha Kabushiki Kaisha. Door glass weather strip in motor vehicles. 4,584,793, Cl. 49-488.000.
Okada, Hitoshi, to Clarion Co., Ltd. Cassette loading/ejecting device. 4,586,096, Cl. 360-96.500.
Okamoto, Masanori; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. New furanone derivatives, process for preparation thereof and use thereof. 4,585,789, Cl. 514-461.000.
Okamoto, Shoji: *See*—
Tohmata, Eisuke; Takahashi, Ryoichiro; Sonoda, Sakae; Okamoto, Shoji; and Furuyama, Osamu, 4,585,564, Cl. 252-32.500.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; and Ito, Kunio, to Konishiroku Photo Industry Co., Ltd. Recording apparatus for electrostatic images. 4,585,319, Cl. 355-3.00R.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Developing electrophotographic image using magnets and magnetic material. 4,585,326, Cl. 355-3.0DD.
Okamura, Masatoshi; Shiba, Haruo; Hashizume, Kenji; and Sakata, Yoshiya, to TDK Corporation. Magnetic tape cassette. 4,585,187, Cl. 242-198.000.
Okamura, Yasushi; Tanaka, Kiichirou; and Fujino, Hideo, to Matsushita Electric Industrial Co., Inc. Thermal head. 4,586,056, Cl. 346-76.0PH.
Okazawa, Takeshi, to NEC Corporation. Method of manufacturing a semiconductor device having a polycrystalline silicon layer. 4,584,760, Cl. 29-571.000.
Oki Electric Industry Co., Ltd.: *See*—
Nakamura, Hiroshi; Kaminishi, Katsuzo; Nonaka, Toshio; and Ishida, Toshimasa, 4,586,063, Cl. 357-22.000.
Oku, Teruo: *See*—
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,585,762, Cl. 514-129.000.
Okubo, Masao: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.
Okuma, Toshiyuki: *See*—
Kidera, Kenji; Nakagawa, Shigeru; Takeda, Takashi; Omori, Katsumi; and Okuma, Toshiyuki, 4,585,681, Cl. 428-36.000.
Okura, Ryoichi: *See*—
Sakka, Kenji; Inui, Taiji; Okura, Ryoichi; Kanazawa, Masao; and Takeda, Yasushi, 4,584,837, Cl. 60-646.000.
Okuyama, Katsumi; and Mizutani, Hiroyasu, to Mitsubishi Petrochemical Co., Ltd. Process for preparing an air-permeable film. 4,585,604, Cl. 264-41.000.
Old, John L.; Jenkins, Gorden P.; and Bullock, Derek J., to Massey-Ferguson Services N.V. Lockable lever arrangements. 4,584,899, Cl. 74-532.000.
Olin Corporation: *See*—
Ashok, Sankaranarayanan; and Breedis, John F., 4,585,494, Cl. 148-435.000.
Boudakian, Max M., 4,585,871, Cl. 546-345.000.
Oliver, Debra. Retractable squat-facilitation toilet footrest. 4,584,725, Cl. 4-254.000.
Olmsted, Dennis R., to Data Electronics, Inc. Fail-safe locking mechanism for tape cartridge drive with movable read/write head. 4,586,095, Cl. 360-93.000.
Olson, Scott B., to North American Sports Training Corporation. Weight assembly. 4,585,228, Cl. 272-119.000.
Olympus Optical Co., Ltd.: *See*—
Imai, Masaharu, 4,586,084, Cl. 358-212.000.
Nishioka, Kimihiko; and Kimura, Hiroyuki, 4,584,988, Cl. 128-6.000.
Omori, Katsumi: *See*—
Kidera, Kenji; Nakagawa, Shigeru; Takeda, Takashi; Omori, Katsumi; and Okuma, Toshiyuki, 4,585,681, Cl. 428-36.000.
Ongaro Dynamics, Ltd.: *See*—
Ongaro, Theodore, 4,584,873, Cl. 73-146.000.
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Ono, Kenzi: *See*—
Okada, Hachiro; and Ono, Kenzi, 4,584,793, Cl. 49-488.000.
Ono, Yoshiaki; and Teranishi, Takeshi, to Pilot Ink Co., Ltd. Stencil printing ink. 4,585,815, Cl. 524-23.000.
Onohara, Kazuyuki: *See*—
Umeda, Haruhiko; Fujita, Nobuo; Bando, Keiji; Onohara, Kazuyuki; and Fujiwara, Yasuo, 4,585,431, Cl. 474-94.000.
Onozuka, Arata: *See*—
Oda, Osamu; Onozuka, Arata; and Koyama, Akio, 4,585,621, Cl. 420-579.000.
Ooms, William J., to Motorola Inc. Diode load emitter coupled logic circuits. 4,585,957, Cl. 307-455.000.
Ootsuka, Yukio: *See*—
Kawai, Hiroshi; and Ootsuka, Yukio, 4,585,047, Cl. 164-126.000.
Opitz, Konrad; and Schwaiger, Gunther, to Hoechst Aktiengesellschaft. Process for preparing liquid low-salt aqueous reactive dyestuff compositions. 4,585,459, Cl. 8-527.000.
Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive: *See*—
Wright, Harry D.; Hale, John M.; and Weber, Eugen, 4,585,542, Cl. 204-415.000.
Oren, Jacob: *See*—
Iosef, Alexander; Bar-on, Menachem; Oren, Jacob; and Kellerman, Dagobert, 4,585,636, Cl. 423-321.00S.
Orlek, Barry S.: *See*—
Gaster, Laramie M.; and Orlek, Barry S., 4,585,588, Cl. 260-239.00D.
Orthotic Limited Partnership: *See*—
Koeneman, James B., 4,584,995, Cl. 128-92.00A.
Orzi, Fabrizio: *See*—
Faustini, Franco; Panzeri, Achille; Orzi, Fabrizio; di Salle, Enrico; and Cescrani, Roberto, 4,585,791, Cl. 514-471.000.
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Matsuguchi, Yutaka, 4,585,505, Cl. 156-361.000.
Matsuguchi, Yutaka, 4,585,506, Cl. 156-361.000.
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Niwa, Takao; Gono, Takeshi; and Osanai, Akinori, 4,584,907, Cl. 74-866.000.
Osborn, Claiborn L.; and Koleske, Joseph V., to Union Carbide Corporation. Magnetic recording medium. 4,585,702, Cl. 428-425.900.
Oscarsson, Rolf A., to Norton Company. Heat exchanger. 4,585,056, Cl. 165-133.000.
Oshita, Shoji: *See*—
Masuda, Teruo; Matsuzaki, Masahiro; and Oshita, Shoji, 4,585,020, Cl. 135-95.000.
Ostmann, Klaus: *See*—
Richard, Herman; Unland, Herman; and Ostmann, Klaus, 4,585,384, Cl. 414-139.000.
O'Toole, James E.; and Proebsting, Robert J., to Thomson Components-Mostek Corporation. Semiconductor memory redundant element identification circuit. 4,586,170, Cl. 365-200.000.
Otsuka, Hiroyoshi: *See*—
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.
Otsuka Pharmaceutical Co., Ltd.: *See*—
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,585,774, Cl. 514-255.000.
Otten, Henricus J. M.; Van Dongen, Frederik; and Geboers, Josephus J. A., to U.S. Philips Corporation. Transmission circuit for a DTMF-telephone set. 4,585,909, Cl. 179-84.0VF.
Otto, William L., Jr.; and Kuhn, Howard A., to Aluminum Company of America. Rolling procedures for eliminating alligator defect formation. 4,584,862, Cl. 72-226.000.
Overholt, Steven D., to Champion International Corporation. Method of use of corrugating adhesive composition for adhering normally abherent surfaces. 4,585,501, Cl. 156-205.000.
Overton, James R.: *See*—
Lentz, Carl M.; Overton, James R.; and Cornell, David D., 4,585,889, Cl. 560-90.090.
Owen, Ieuan: *See*—
Syred, Nicholas; Biffin, Martin; and Owen, Ieuan, 4,585,466, Cl. 55-349.000.
Owen, James H., II: *See*—
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Honeyman, Gordon R.; and Owen, James H., II, 4,585,496, Cl. 149-21.000.
Owen, Robert R.: *See*—
Mayeda, Bruce H.; and Owen, Robert R., 4,585,073, Cl. 172-158.000.
Owens-Illinois, Inc.: *See*—
Karabedian, James A., 4,585,679, Cl. 428-35.000.
Oy Nokia AB: *See*—
Ravela, Jussi T., 4,585,406, Cl. 425-113.000.
Ozaki, Hideyuki: *See*—
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Ozu, Masao; and Monden, Tsuneo, to Kabushiki Kaisha Toshiba. Enclosed type compressor and method for assembling the same. 4,584,750, Cl. 29-156.40R.
Pacton, Roger: *See*—
Casselman, Chantal; Malet, Jean C.; Sophy, Yvon; and Pacton, Roger, 4,584,802, Cl. 52-169.700.
Paddock, Paul F.; and LaVars, Everett G., to Sunkist Growers, Inc. Method and apparatus for high speed processing of fruit or the like. 4,585,126, Cl. 209-539.000.
Padfield, John M.; and Winterborn, Ian K., to Glaxo Group Limited. Pharmaceutical compositions. 4,585,790, Cl. 514-471.000.
Pagan, Augustine J. Sucker rod assembly. 4,585,368, Cl. 403-266.000.
Pai, Robert Y.: *See*—
Marcucci, Rudolph V.; and Pai, Robert Y., 4,585,468, Cl. 65-277.000.
Pakula, Benjamin J., to Ford Motor Company. Self-contained electric diesel engine fuel filter assembly heater. 4,585,924, Cl. 219-205.000.

Pan, Wie-Hin: *See—*
Stiefel, Edward I.; Pan, Wie-Hin; and Halbert, Thomas R., 4,585,882, Cl. 556-38.000.
Panaoussis, Spyro, to Kalhas Oracle, Inc. System and method for high density data recording. 4,586,091, Cl. 360-40.000.
Pang, Peter K. T.; and Tenner, Thomas E., Jr., to Texas Tech University Health Sciences Center. Hypotensive active peptides. 4,585,757, Cl. 514-18.000.
Pannell, Richard B.: *See—*
Beuther, Harold; Kobylinski, Thaddeus P.; Kibby, Charles L.; and Pannell, Richard B., 4,585,798, Cl. 518-715.000.
Panushka, Lawrence C., to Lockheed Corporation. Spring-loaded push-pull cable assembly. 4,584,898, Cl. 74-501.50R.
Panzeri, Achille: *See—*
Faustini, Franco; Panzeri, Achille; Orzi, Fabrizio; di Salle, Enrico; and Ceserani, Roberto, 4,585,791, Cl. 514-471.000.
Papa, Ralph A.: *See—*
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Paper Converting Machine Company: *See—*
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Bradley, John J.; and Merkatoris, John R., 4,585,507, Cl. 156-461.000.
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Parish, Harold C.: *See—*
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Parker, Lawrence A.; Keeter, James W.; and Robles, Arturo C. Concrete forming system. 4,585,204, Cl. 249-28.000.
Parkinson, Martin: *See—*
Parkinson, Martin C.; and Wiley, Gary B., 4,584,781, Cl. 34-92.000.
Parkinson, Martin C.; and Wiley, Gary B., to Parkinson, Martin. Low friction vacuum valve and drying apparatus. 4,584,781, Cl. 34-92.000.
Parks, Robert R., to General Motors Corporation. Air dam for motor vehicle. 4,585,262, Cl. 296-1.00S.
Parr, Darrell. Universal electrical plug adapter. 4,585,286, Cl. 339-31.00M.
Parrott, Stephen L.: *See—*
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,585,751, Cl. 502-211.000.
Parry, Peter D.: *See—*
Duncan, Hibbert A.; Ehret, Francis J.; Kahn, Sherwin R.; Kinney, Karen H.; and Parry, Peter D., 4,585,931, Cl. 235-464.000.
Parsekian, Peter M. Anti-theft locking device. 4,585,202, Cl. 248-553.000.
Parsen, Frank E.: *See—*
Chalilpoyil, Purush; Rea, Jesse R.; Parsen, Frank E.; and Wang, Chih-Chung, 4,585,716, Cl. 429-206.000.
Parsons, John M.; Smith, Raymond L.; and Wynn, James A., Jr., to General Electric Company. Cathode ray tube mounting system. 4,586,087, Cl. 358-246.000.
Pasco, Robert W.: *See—*
Schwarz, James A.; and Pasco, Robert W., 4,585,672, Cl. 427-88.000.
Pasquale, Antonio: *See—*
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Pontevivo, Michele, 4,585,864, Cl. 546-14.000.
Pasternack, George; Bishop, Timothy E.; and Cutler, Orvid R., Jr., to DeSoto, Inc. Optical glass fiber coated with cationically curable polyepoxide mixtures. 4,585,534, Cl. 522-31.000.
Paterok, Lienhard: *See—*
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.
Pathe, Claude; Darmois, Jean; and Nee, Claude, to Societe Nationale Industrielle Aerospatiale. Electrical device comprising at least one thermal battery and its application to a modulable power generator. 4,585,713, Cl. 429-112.000.
Patoka, Martin H.: *See—*
Malik, Randhir S.; and Patoka, Martin H., 4,586,120, Cl. 363-21.000.
Patroni, Anthony F., Jr. Drive mechanism for occupant propelled vehicle and the like. 4,584,889, Cl. 74-49.000.
Paul, Gunther: *See—*
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Pawlowski, Michael: *See—*
Stillman, Gerald T.; Pawlowski, Michael; and McDavid, Larry S., 4,586,149, Cl. 364-557.000.
Payne, George T., to National Machinery Company, The. Method of making copper-clad bimetal electrodes for spark plugs. 4,585,421, Cl. 445-7.000.
Peascoe, Warren J.: *See—*
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Peeling, Clyde R.: *See—*
Peeling, George C.; and Peeling, Clyde R., 4,585,112, Cl. 194-293.000.
Peeling, George C.; and Peeling, Clyde R. Automated feeding device. 4,585,112, Cl. 194-293.000.
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Martens, Jan W. D.; and Peeters, Winfried L., 4,586,092, Cl. 360-59.000.
Pennwalt Corporation: *See—*
Bartoszek, Edward J.; and Mones, Steven F., 4,585,701, Cl. 428-421.000.
MacLeay, Ronald E., 4,585,857, Cl. 534-587.000.
Miller, Walter J., 4,585,901, Cl. 174-35.0MS.
Penny, Glenn S.; Dill, Walter R.; and Gardner, Tommy R., to Halliburton Company. Methods of increasing hydrocarbon production from subterranean formations. 4,585,065, Cl. 166-308.000.
Penry, Verlyn M. Status-displaying device for video tape storage jackets. 4,585,123, Cl. 206-387.000.
Penzien, Klaus: *See—*
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Perl, Martin G., to General Electric Company. Undervessel arrangement. 4,585,611, Cl. 376-260.000.
Perrone, Ettore: *See—*
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Pesa, Frederick A.: *See—*
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Peters, Arthur J.; and Marks, Eugene A., to Bourns Instruments, Inc. Batch-process silicon capacitive pressure sensor. 4,586,109, Cl. 361-283.000.
Peters, Manfred: *See—*
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Petersen, Wallace C., to Du Pont de Nemours, E. I., and Company. Herbicidal azobenzenesulfonamides. 4,585,470, Cl. 71-87.000.
Petrik, Frantisek: *See—*
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Petroff, Michael D.; Stapelbroek, Maryn G.; and Kleinhans, William A., to Rockwell International Corporation. Solid state photomultiplier. 4,586,068, Cl. 357-30.000.
Petroff, Michael D.: *See—*
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Pettenski, Thomas A.: *See—*
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Pfeiffer, Roland, to Ruhrgas Aktiengesellschaft. Method for the conversion of nitrogen oxides contained in gaseous products of combustion. 4,585,631, Cl. 423-235.000.
Pfizer Inc.: *See—*
Gymer, Geoffrey E.; and Richardson, Kenneth, 4,585,778, Cl. 514-326.000.
Nagel, Arthur A., 4,585,759, Cl. 514-29.000.
Urban, Frank J., 4,585,888, Cl. 560-53.000.
Phan, Nghia V.: *See—*
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Philip Morris Incorporated: *See—*
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Philips Medical Systems, Inc.: *See—*
Maudsley, Andrew A.; Hilal, Sadek K.; and Simon, Howard E., 4,585,992, Cl. 324-309.000.
Phillips, Dollie T. Sewing device. 4,584,952, Cl. 112-148.000.
Phillips, Edward H. Step-and-repeat alignment and exposure system. 4,585,337, Cl. 355-45.000.
Phillips Petroleum Company: *See—*
Divis, Richard T.; and Jones, William R., 4,585,644, Cl. 423-450.000.
Funk, Gary L.; and Voelkers, James D., 4,586,126, Cl. 364-172.000.
Johnson, Timothy W.; and Mueller, Francis X., Jr., 4,585,700, Cl. 428-419.000.
Kukes, Simon G.; Parrott, Stephen L.; and Brandes, Karlheinz K., 4,585,751, Cl. 502-211.000.
Pierce, Dale E.; Vaughan, Jerry L.; and Nowlin, Oscar D., 4,585,749, Cl. 502-107.000.
Piaggio & C. S.p.A.: *See—*
Gaddi, Bruno, 4,585,430, Cl. 474-12.000.
Piccoli, Dante E., to Goodyear Tire & Rubber Company, The. Reinforced hose. 4,585,035, Cl. 138-127.000.
Pierce, Dale E.; Vaughan, Jerry L.; and Nowlin, Oscar D., to Phillips Petroleum Company. Process for the preparation of an olefin polymerization catalyst. 4,585,749, Cl. 502-107.000.
Pierce, Dean T.: *See—*
Rassieur, Charles L.; and Pierce, Dean T., 4,585,256, Cl. 285-190.000.
Pierrey, Jean-Louis, to Novatome. Heat exchanger having a bundle of straight tubes. 4,585,058, Cl. 165-135.000.
Pike, Ronald J., to D.A.B. Industries, Inc. Filament-reinforced composite transmission brake band. 4,585,098, Cl. 188-251.00A.
Pilot Ink Co., Ltd.: *See—*
Ono, Yoshiaki; and Teranishi, Takeshi, 4,585,815, Cl. 524-23.000.
Pinori, Massimo: *See—*
Di Trapani, Romano; Pinori, Massimo; and Verdini, Antonio S., 4,585,586, Cl. 260-112.50R.
Pinsard, Jean-Jacques; and Roger, Jacques, to Compagnie Industrielle des Telecommunication CIT-Alcatel. Optical cable header. 4,585,303, Cl. 350-96.200.

Pioneer Electronic Corporation: *See*—
Suzuki, Hiroyuki; and Kobayashi, Shinichi, 4,586,099, Cl. 360-128.000.

Pirelli Cable Corporation: *See*—
Silver, David A.; and Rowland, John C., 4,585,407, Cl. 425-114.000.

Pirtle, George M.; and Acres, Ronald C., to General Electric Company. Vane retaining means. 4,585,390, Cl. 415-160.000.

Pitney Bowes Inc.: *See*—
LaBate, Joseph, 4,585,226, Cl. 271-264.000.

Pitroda, Pravin G. Tape dispenser. 4,585,145, Cl. 221-58.000.

Pittet, Alan O.; Muralidhara, Ranya; Luccarelli, Domenick, Jr.; Miller, Kevin P.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Flavoring with gem dithioethers of phenylalkanes. 4,585,663, Cl. 426-535.000.

Plank, Johann; and Aignesberger, Alois, to SKW Trostberg Aktiengesellschaft. Acid group-containing hydrophilic co-condensation products of ketone-aldehyde resins. 4,585,853, Cl. 528-227.000.

Plaskett, John, to Frito-Lay, Inc. Apparatus for automatically closing L-slide lock cartons. 4,584,818, Cl. 53-374.000.

Plassard, Guy: *See*—
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Plasse, Paul A.: *See*—
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Plassmeier, Horst, to Durkoppwerke GmbH. Digital control system for the speed of a sewing machine. 4,586,123, Cl. 364-167.000.

Plastipak Packaging, Inc.: *See*—
Darr, Richard C., 4,585,408, Cl. 425-171.000.

Plath, Ernst-Dieter, to Sipra Patententwicklungs-und Beteiligungsgesellschaft. Knitting machine for producing mesh products. 4,584,851, Cl. 66-104.000.

Plaut, Werner P. B. Self-tracking belt roller. 4,585,118, Cl. 198-840.000.

Plempel, Manfred; Bucheler, Manfred; Gau, Wolfgang; Regel, Erik; Buchel, Karl H.; and Ploschke, Hans-Jurgen, to Bayer Aktiengesellschaft. Azole derivatives antimycotic agents which release the active compounds at a relatively high rate. 4,585,782, Cl. 514-396.000.

Plenk, Hans-Joachim, to Jochen Plenk K.G. Ski. 4,585,249, Cl. 280-609.000.

Ploschke, Hans-Jurgen: *See*—
Plempel, Manfred; Bucheler, Manfred; Gau, Wolfgang; Regel, Erik; Buchel, Karl H.; and Ploschke, Hans-Jurgen, 4,585,782, Cl. 514-396.000.

Pneumatici Clement S.p.A.: *See*—
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Podiak, Richard S.: *See*—
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Pogue, Harold D.: *See*—
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Pompon, Jean-Bernard: *See*—
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Pontevivo, Michele: *See*—
Marraccini, Antonio; Carlini, Filippo M.; Pasquale, Antonio; and Pontevivo, Michele, 4,585,864, Cl. 546-14.000.

Poppe, Wilfried; and Dorscheimer, Manfred, to H. B. Fuller GmbH. Process for the coating of cheese. 4,585,658, Cl. 426-303.000.

Posey, Robert G.; and Culbertson, Edwin C., to American Hoechst Corporation. Copolyester primed polyester film. 4,585,687, Cl. 428-195.000.

Potts, Alan. Mineral breakers. 4,585,180, Cl. 241-186.00A.

Poutiainen, Kari; and Taina, Timo, to Asko Oy. Bottle hamper. 4,585,137, Cl. 220-21.000.

Powell, Charles. Positive trigger trap. 4,584,788, Cl. 43-88.000.

Powell, Richard L., to Imperial Chemical Industries PLC. Heat pumps. 4,585,569, Cl. 252-69.000.

Powers, James C., to Georgia Tech Research Institute. Thioester inhibitors of serine proteases. 4,585,793, Cl. 514-513.000.

Preis, Lothar; Schmidt, Rudolf; Esser, Josef; and Magg, Hans, to Bayer Aktiengesellschaft. Reinforcing agents for elastomers, the production of reinforced elastomers and reinforced elastomers. 4,585,811, Cl. 523-206.000.

Pressey, John R. Layout template for electrical panel. 4,584,780, Cl. 33-563.000.

Pretto, John. Adjustable mounting arrangement for magnetic head. 4,586,098, Cl. 360-109.000.

Price, Floyd W., to Burry-Lu, Inc. Adjustable conveyor track for ice cream sandwich machine. 4,584,933, Cl. 99-450.400.

Price, Frank D. Dry capacitor circuit interrupter. 4,586,107, Cl. 361-272.000.

Pride, Peter, to Gaichime Pty. Limited. Food container and insert. 4,585,124, Cl. 206-559.000.

Priesnitz, Uwe: *See*—
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,585,870, Cl. 546-302.000.

Pringle, Robert D.; and O'Berry, William A., to United States of America, Air Force. Automatic reprogramming means for countermeasures system. 4,586,046, Cl. 343-18.00E.

Pro-Guard, Inc.: *See*—
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Probe-Tronics, Inc.: *See*—
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Procter & Gamble Company, The: *See*—
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Proctor & Schwartz, Inc.: *See*—
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Proebsting, Robert J.: *See*—
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Progneaux, Eric R.; and Trego, Brian R., to Dow Corning Ltd.; and Dow Corning S.A. Elastomer forming compositions. 4,585,821, Cl. 524-425.000.

Prohaska, Hans: *See*—
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Pronger, Oliver M., Jr.; and Heavener, Charles M., to Chicago Bridge & Iron Company. Method and apparatus of storing ice slurry and its use for cooling purposes. 4,584,843, Cl. 62-123.000.

Prue, Walter W., Jr.; and Eccleston, Larry E., to John Fluke Mfg. Co., Inc. Regulated voltage supply with sense current cancellation circuit. 4,585,987, Cl. 323-275.000.

Pryor, David A., to Victor Equipment Company. Spring loaded heating torch tip. 4,585,409, Cl. 431-346.000.

Pryor, Michael J.: *See*—
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Pryor, Timothy R. Pulsed robotic inspection. 4,585,350, Cl. 356-375.000.

Pryor, Timothy R.: *See*—
Liptay-Wagner, Nicholas; Renaud, Roland; Pryor, Timothy R.; and Clarke, Donald A., 4,585,947, Cl. 250-560.000.

Pudlo, Frank S.: *See*—
Landis, William C.; and Pudlo, Frank S., 4,585,300, Cl. 350-96.200.

Puetter, Hermann; Naarmann, Herbert; and Penzien, Klaus, to BASF Aktiengesellschaft. Ion exchange membranes consisting of pyrrole polymers. 4,585,536, Cl. 204-182.300.

Pursell, Richard A. Christmas tree stand. 4,585,201, Cl. 248-523.000.

Puryear, John W., to Brunswick Corporation. Backlash control device for magnetic bait cast reel. 4,585,183, Cl. 242-84.52B.

Pye, Michael R., to Sinclair Research Ltd. Low voltage push-pull amplifier. 4,586,001, Cl. 330-267.000.

Q-Dot, Inc.: *See*—
Linnenbrink, Thomas E., 4,586,010, Cl. 333-165.000.

Q.E.D. Environmental Systems, Inc.: *See*—
Bernardin, Frederick E.; Dickinson, William D.; and Mioduszewski, David, 4,585,060, Cl. 166-64.000.

Quis, Peter: *See*—
Auer, Heinz-Jochen; Klesse, Wolfgang; Quis, Peter; and Szubinski, Walther W., 4,585,809, Cl. 523-139.000.

R. A. Jones & Co. Inc.: *See*—
Greenwell, Joseph D., 4,585,113, Cl. 198-347.000.

Raab, Harald: *See*—
Gobel, Hilmar; and Raab, Harald, 4,585,110, Cl. 192-106.200.

Rabinov, Anatoly I.: *See*—
Alexandrov, Vladimir M.; Rabinov, Anatoly I.; Shalyapin, Mikhail I.; and Jutkevich, Valery I., 4,585,078, Cl. 173-93.500.

Racal Data Communications, Inc.: *See*—
Stegenga, Jerry A., 4,585,122, Cl. 206-334.000.

Rachner, Horst: *See*—
Gille, Gunther; Goertler, Horst; Lill, Anton; Prohaska, Hans; Rachner, Horst; and Theurer, Thomas, 4,585,980, Cl. 318-444.000.

Rackur, Gerhard: *See*—
Hitzel, Volker; Rackur, Gerhard; and Bickel, Martin, 4,585,775, Cl. 514-287.000.

Raffel, Jack I.; Yasaitis, John A.; Chapman, Glenn H.; and Naiman, Mark L., to Massachusetts Institute of Technology. Method of making a conductive path in multi-layer metal structures by low power laser beam. 4,585,490, Cl. 148-1.500.

Raftis, Spiros G.; and Merritt, George W., to Red Valve Co., Inc. Inversion-resistant tide gate valve. 4,585,031, Cl. 137-846.000.

Raines, Donald B.: *See*—
DeNiro, Richard G.; Raines, Thomas M.; Raines, Donald B.; and Raines, Joseph B., 4,585,416, Cl. 433-140.000.

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Rajan, Eva. Device for stabilizing the pelvis of a patient lying on his side. 4,584,730, Cl. 5-431.000.

Raleigh, Michael. Fast passive coaxial integrator. 4,586,008, Cl. 333-19.000.

Raley, Garland E.; and Spear, Dean M., to Ethyl Corporation. Screen fabrication. 4,585,156, Cl. 228-132.000.

Ramirez, Ernest R.: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,585,562, Cl. 210-805.000.

Ramsey, Mark S.; and Miller, James F., to Exxon Production Research Co. Cable connector for use in downhole drilling and logging operations. 4,585,287, Cl. 339-60.00C.

Randazzo, Matthew J.: *See*—
Cooper, Frank W., Jr.; Andrews, Harry N.; and Randazzo, Matthew J., 4,586,079, Cl. 358-100.000.

Rasmussen, Russell G.; Jaworski, Eugene; and Morrison, Howard J., to Marvin Glass & Associates. Mobile playset. 4,585,426, Cl. 446-428.000.

Rassieur, Charles L.; and Pierce, Dean T., to Central Mine Equipment. Side feed water swivel. 4,585,256, Cl. 285-190.000.
Rathe, Robert A.; and Volkman, Thomas M., to FMC Corporation. Extensible boom with manual section stored in base. 4,585,132, Cl. 212-268.000.
Ravela, Jussi T., to Oy Nokia AB. Apparatus for providing a fibre with an additional length in secondary mantling of an optical fibre. 4,585,406, Cl. 425-113.000.
Ravesteyn, Cornelis J.: *See*—
Wolters, Tjako A.; Ravesteyn, Cornelis J.; and Ruyter, Thomas J., 4,584,784, Cl. 37-58.000.
Raychem Corporation: *See*—
Krackeler, Joseph J.; and Weir, Fred E., 4,585,607, Cl. 264-229.000.
RCA Corporation: *See*—
Butterwick, Gilbert N., 4,585,935, Cl. 250-213.0VT.
Ciszek, Andrew, 4,586,007, Cl. 333-175.000.
Gale, Michael T.; Ebnother, Martin; and Schuetz, Helmut, 4,585,513, Cl. 156-630.000.
Inacker, Henry F.; Humphrey, Larry L.; and Staiman, David, 4,586,047, Cl. 343-372.000.
Landis, William C.; and Pudlo, Frank S., 4,585,300, Cl. 350-96.200.
Maa, Jer-shen, 4,585,515, Cl. 156-643.000.
RCA Inc.: *See*—
McIntyre, Robert J., 4,586,066, Cl. 357-30.000.
Webb, Paul P., 4,586,067, Cl. 357-30.000.
Rea, Jesse R.: *See*—
Chalilpoyil, Purush; Rea, Jesse R.; Parsen, Frank E.; and Wang, Chih-Chung, 4,585,716, Cl. 429-206.000.
Reale, Louis, to Xerox Corporation. Corona generating device. 4,585,322, Cl. 355-3.0CH.
Reams, Donald J., to Probe-Tronics, Inc. Fixed point method and apparatus for probing semiconductor devices. 4,585,727, Cl. 430-312.000.
Rector, Robert E.; Taylor, Larry T.; Yarberry, Scott H.; and Grassi, Richard J., to Gulton Industries, Inc. Memory transfer unit. 4,586,157, Cl. 364-900.000.
Red Valve Co., Inc.: *See*—
Raftis, Spiros G.; and Merritt, George W., 4,585,031, Cl. 137-846.000.
Reddy, Chitranjan: *See*—
Hashimoto, Masashi; and Reddy, Chitranjan, 4,585,954, Cl. 307-296.00R.
Redmers, Karl-Heinz: *See*—
Even, Hans-Dieter; Missmahl, Bodo; Redmers, Karl-Heinz; and Rembe, Hubertus, 4,585,168, Cl. 239-74.000.
Redmon, C. Peter; Redmon, Samuel C.; and Glass, Henry P., to W. C. Redmon Company. Multi-bag laundry hamper. 4,585,283, Cl. 312-250.000.
Redmon, Samuel C.: *See*—
Redmon, C. Peter; Redmon, Samuel C.; and Glass, Henry P., 4,585,283, Cl. 312-250.000.
Reece, Alan R.: *See*—
Grinstead, Timothy W.; and Reece, Alan R., 4,585,372, Cl. 405-159.000.
Reed, Ronald G., to Hewlett-Packard Company. Beam penetration CRT with internal automatic constant deflection factor and pattern correction. 4,585,976, Cl. 315-370.000.
Reedy, Dennis C.: *See*—
Gaudenzi, Gene J.; Norsworthy, John P.; Phan, Nghia V.; and Reedy, Dennis C., 4,585,953, Cl. 307-270.000.
Regalbuto, John A.; and Dailey, James E., to Jet Research Center Inc.; and Brown & Root, Inc. High energy formed connections. 4,585,374, Cl. 405-227.000.
Regel, Erik: *See*—
Plempel, Manfred; Bucheler, Manfred; Gau, Wolfgang; Regel, Erik; Buchel, Karl H.; and Ploschke, Hans-Jurgen, 4,585,782, Cl. 514-396.000.
Rehder, Jurgen; Schuhmann, Siegfried; and Steiner, Gerd, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for scanning printing plates. 4,586,148, Cl. 364-550.000.
Reichenecker, Egon: *See*—
Czeschka, Franz; Reichenecker, Egon; and Zorn, Reinhard, 4,585,293, Cl. 339-221.00R.
Reid, John H. Barrier oxidation ditch having increased flow efficiency and oxygen transfer efficiency. 4,585,555, Cl. 210-194.000.
Reid, Lee R.; and Cody, Tommy D., to Texas Instruments Incorporated. Solid state multiprobe testing apparatus. 4,585,991, Cl. 324-158.00P.
Reilly, Patrick J., to Goodyear Tire & Rubber Company, The. Monomer removal from a polymer. 4,585,808, Cl. 522-116.000.
Reinhard, Donnie K.: *See*—
Asmussen, Jes; and Reinhard, Donnie K., 4,585,668, Cl. 427-38.000.
Reinhold, Gasper, to Zimmer, Johannes. Electromagnetic beam. 4,586,014, Cl. 333-296.000.
Reischle, Ferdinand; Windhoff, Jochen; and Bernig, Walter, to H. B. Fuller Company. Fusion adhesive which can comprise an isocyanate prepolymer, a thermoplastic polymer and/or a lower molecular weight ketone resin. 4,585,819, Cl. 524-196.000.
Reiss, Bernard; and Ward, Irl E., to Sealy of Maryland and Virginia, Inc. Sofa bed spring improvements. 4,584,727, Cl. 5-13.000.
Reliability Incorporated: *See*—
Gussman, Robert L., 4,584,764, Cl. 29-705.000.
Reliance Electric Company: *See*—
Marks, Robert J., 4,585,141, Cl. 220-326.000.
Rembe, Hubertus: *See*—
Even, Hans-Dieter; Missmahl, Bodo; Redmers, Karl-Heinz; and Rembe, Hubertus, 4,585,168, Cl. 239-74.000.
Remley, Kenneth H., to American Cyanamid Company. Low formaldehyde release reactant. 4,585,827, Cl. 524-598.000.
Renaud, Roland: *See*—
Liptay-Wagner, Nicholas; Renaud, Roland; Pryor, Timothy R.; and Clarke, Donald A., 4,585,947, Cl. 250-560.000.
Research Association for Residual Oil Processing: *See*—
Usui, Kazushi; and Tawara, Kinya, 4,585,748, Cl. 502-66.000.
Reuss, George D.: *See*—
Adlon, Daniel T.; Bianchi, Edward A.; College, Neil F.; and Reuss, George D., 4,584,757, Cl. 29-564.600.
Rex, Donald K.: *See*—
Cornell, Robert W.; Howes, James K.; Koteff, Walter B.; and Rex, Donald K., 4,585,606, Cl. 264-156.000.
Rexnord Inc.: *See*—
Crandall, Robert E.; and Nickolaus, Roger B., 4,584,936, Cl. 100-118.000.
Reynolds, Charles E.: *See*—
Frantz, Robert H.; Waters, Mark H.; and Reynolds, Charles E., 4,585,292, Cl. 339-143.00R.
Rheinmetall GmbH: *See*—
Vavra, Norbert; and Seidensticker, Jens, 4,584,943, Cl. 102-214.000.
Rhone-Poulenc Sante: *See*—
Arnaud, Michel; and Corbet, Jean-Pierre, 4,585,867, Cl. 546-153.000.
Riccitelli, Carl. Motorcycle having belt drive conversion. 4,585,087, Cl. 180-230.000.
Rich, Keith E., to Davy McKee (Poole) Limited. Transverse flux induction heating of metal strip. 4,585,916, Cl. 219-10.61R.
Richard, Herman; Unland, Herman; and Ostmann, Klaus, to Hartmann Fordertechnik GmbH. Multi-stage conveyor system. 4,585,384, Cl. 414-139.000.
Richard Jansen GmbH: *See*—
Jansen-Herfeld, Roettger, 4,584,920, Cl. 83-838.000.
Richard Wolf GmbH: *See*—
Baier, Manfred, 4,585,399, Cl. 417-477.000.
Richardson, Kenneth: *See*—
Gymer, Geoffrey E.; and Richardson, Kenneth, 4,585,778, Cl. 514-326.000.
Richardson-Vicks, Inc.: *See*—
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,585,783, Cl. 514-408.000.
Richman Brothers Company: *See*—
Budziak, Frank W.; Burton, James O.; and Ahlin, Frank J., 4,586,150, Cl. 364-562.000.
Richo Co., Ltd.: *See*—
Matsuura, Yozo, 4,586,059, Cl. 346-153.100.
Richter, Sabine: *See*—
Demus, Dietrich; Zaschke, Horst; Richter, Sabine; Deutscher, Hans-Joachim; and Wiegeleben, Adelbert, 4,585,576, Cl. 252-299.620.
Richter, Simon J., to Coca-Cola Company, The. Open top tank with flow rate control device therein. 4,585,146, Cl. 222-1.000.
Ricoh Company, Ltd.: *See*—
Hamaguchi, Iwao; and Shibata, Isamu, 4,585,297, Cl. 350-6.800.
Kondo, Mitsuru, 4,586,088, Cl. 358-257.000.
Ohzeki, Yoshiaki, 4,586,086, Cl. 358-256.000.
Suzuki, Minoru, 4,585,327, Cl. 355-3.00R.
Yamazaki, Hiroshi; Isayama, Takuro; Ameyama, Minoru; Matsumoto, Shuzo; and Katano, Yasuo, 4,586,058, Cl. 346-140.00R.
Ridenour, Ralph G., to Universal Enterprises Inc. Heavy duty tube coupling. 4,585,255, Cl. 285-93.000.
Riebel, Hans-Jochem: *See*—
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,585,870, Cl. 546-302.000.
Rieck, Hans-Peter, to Hoechst Aktiengesellschaft. Process for the preparation of crystalline sodium silicates. 4,585,642, Cl. 423-333.000.
Rieder, Heinz; and Schwaiger, Max, to RSF Elektronik Gesellschaft M.B.H. Linear measuring system. 4,584,773, Cl. 33-125.00C.
Riker Laboratories, Inc.: *See*—
Stern, Richard M., 4,585,868, Cl. 546-165.000.
Riley, Edwin J.: *See*—
Sozio, Ralph B.; and Riley, Edwin J., 4,585,417, Cl. 433-202.100.
Riley, N. D. Night-hunting method and apparatus. 4,586,114, Cl. 362-191.000.
Riley, Terence J.: *See*—
Hartman, Adrian R.; Murphy, Bernard T.; Riley, Terence J.; and Shackle, Peter W., 4,586,073, Cl. 357-45.000.
Rilly, Gerard; Morizot, Gerard; Lopez, Daniel; and Weisser, Erich, to Deutsche Thomson-Brandt GmbH. High voltage transformer for deflection of electron beams. 4,586,016, Cl. 336-96.000.
Rimbey, Ronald P.: *See*—
Adams, Frederic R.; Kwasiborski, Stanley, Jr.; and Rimbey, Ronald P., 4,585,261, Cl. 292-216.000.
Rinaldelli, Maria P. S. Didactic aid for the teaching of any number system. 4,585,419, Cl. 434-189.000.
RIT Research Corp.: *See*—
Standler, Ronald B., 4,586,104, Cl. 361-91.000.
Ritscher, James S.: *See*—
Kuo, An-Li; Goddard, Errol D.; and Ritscher, James S., 4,585,829, Cl. 524-714.000.

Ritzerfeld, Willem G. J.; and Eertink, Bastiaan B. B., to Oce-Nederland B.V. System for measuring the optical density of both the background and the image areas of an original. 4,585,352, Cl. 356-444.000.

Rivizna Foods Inc.: *See*—
Kohlwey, David E., 4,585,664, Cl. 426-619.000.

Rivoire, Albert, to Speno Rail Services Co. Automated railway track maintenance system. 4,584,798, Cl. 51-178.000.

Roberson, Keith; Stevens, Don L.; and Filter, Harold E., to Dow Chemical Company, The. In situ solidification of ion exchange beads. 4,585,583, Cl. 252-628.000.

Robert Bosch GmbH: *See*—
Clement, Albrecht; Mayer, Dieter; and Wild, Ernst, 4,584,982, Cl. 123-489.000.
Eschrich, Gerhard; Muller, Alfred; Sauer, Joseph; and Schreiber, Achim, 4,584,905, Cl. 74-861.000.
Gorzel, Heribert; and Liess, Wolfgang, 4,586,003, Cl. 330-297.000.
Grauel, Ingolf; and Stumpe, Werner, 4,585,278, Cl. 303-7.000.
Haas, Wolfgang; Muller, Willi; Schacht, Hans; and Scholz, Erich, 4,585,022, Cl. 137-172.000.
Knapp, Heinrich, 4,585,174, Cl. 239-533.800.
Kubach, Hans; and Hascher-Reichl, Asta, 4,585,176, Cl. 239-585.000.
Leiber, Heinz, 4,585,280, Cl. 303-100.000.
Schwenk, Siegfried; Hossler, Andreas; Heyke, Klaus; and Wallrauch, Alexander, 4,586,075, Cl. 357-74.000.

Roberts, Jess D.; and Wimpelberg, George E. Disposable full spinal immobilization backboard. 4,584,729, Cl. 5-82.00R.

Roberts, Thomas G.; and Honeycutt, Thomas E. Monitor system for potentially hazardous radiation and combustion conditions. 4,585,932, Cl. 250-380.000.

Robins, Alan: *See*—
Higgs, Derek J.; Murty, Russell G.; and Robins, Alan, 4,585,273, Cl. 297-452.000.

Robles, Arturo C.: *See*—
Parker, Lawrence A.; Keeter, James W.; and Robles, Arturo C., 4,585,204, Cl. 249-28.000.

Rochat, Alain C.: *See*—
Jost, Max; Iqbal, Abul; and Rochat, Alain C., 4,585,878, Cl. 548-453.000.

Rockwell International Corporation: *See*—
Leonard, Kirke, 4,584,860, Cl. 72-61.000.
Murphy, Hugh J., 4,585,990, Cl. 324-102.000.
Petroff, Michael D.; Stapelbroek, Maryn G.; and Kleinhans, William A., 4,586,068, Cl. 357-30.000.
Soclof, Sidney I., 4,584,762, Cl. 29-577.00R.
Stapelbroek, Maryn G.; and Petroff, Michael D., 4,586,074, Cl. 357-58.000.

Roger, Jacques: *See*—
Pinsard, Jean-Jacques; and Roger, Jacques, 4,585,303, Cl. 350-96.200.

Roger, Pierre; Choay, Patrick; and Fournier, Jean-Paul, to DROPIC - Societe Civile de gestion de droits de propriete Industrielle CHOAY. Benzenesulfonyl-lactams and their use as active substances of pharmaceutical compositions. 4,585,769, Cl. 514-212.000.

Rohm GmbH: *See*—
Auer, Heinz-Jochen; Klesse, Wolfgang; Quis, Peter; and Szubinski, Walther W., 4,585,809, Cl. 523-139.000.
Jung, Karl A.; Jakob, Karl-Heinz; Munzer, Manfred; and Wopker, Wilhelm, 4,585,818, Cl. 524-120.000.

Roland, John F., to Kraft, Inc. Immobilized enzyme systems. 4,585,738, Cl. 435-176.000.

Rolls-Royce Limited: *See*—
Webster, John R.; and Holroyd, Trevor J., 4,584,879, Cl. 73-588.000.

Rollyson, Richard A.; Wesson, Peter D.; and Zerwekh, Paul S., to Hercules Incorporated. Extrusion, conveyance, and cutting system. 4,585,600, Cl. 264-3.300.

Roneo Alcatel Limited: *See*—
Williams, Thomas D.; and Usher, Paul, 4,585,218, Cl. 271-10.000.

Rosch, Paulette M.; and Kopacz, Thomas J., to Kimberly-Clark Corporation. Refastenable tape system for disposable diapers and similar garments. 4,585,450, Cl. 604-390.000.

Rose, Richard. Front fork shock slider for motorcycles and the like. 4,585,245, Cl. 280-277.000.

Rose, Vernon F. Retaining device for a pick head and pick equipped therewith. 4,585,370, Cl. 403-334.000.

Rosemount Inc.: *See*—
Frick, Roger L., 4,586,108, Cl. 361-283.000.

Rosenblad, Axel E., to Rosenblad Corporation. Method and apparatus for closing the vent of an evaporator. 4,585,520, Cl. 159-47.100.

Rosenblad Corporation: *See*—
Rosenblad, Axel E., 4,585,520, Cl. 159-47.100.

Rosenbush, David M.; and Couch, Robert P., to United Technologies Corporation. Normalizing engine wear indication with R.M.S. noise. 4,586,139, Cl. 364-431.020.

Rosener, Harvey J.; Knierim, David L.; and Dalrymple, John C., to Tektronix, Inc. Raster display smooth line generation. 4,586,037, Cl. 340-728.000.

Rosenthal, Harold R.; and Bert, Laura. Treatment of herpes. 4,585,656, Cl. 424-195.100.

Ross, Barry C.: *See*—
Cooke, Michael D.; and Ross, Barry C., 4,585,767, Cl. 514-210.000.

Ross, Joseph L.: *See*—
Gartside, Robert J.; Johnson, Axel R.; Ross, Joseph L.; Duncan, Dennis A.; and Bassler, Edwin J., 4,585,544, Cl. 208-73.000.

Ross, Robert H., to Seco/Warwick Corporation. Ingot pusher furnace. 4,585,412, Cl. 432-148.000.

Rossberg, Rolf, to International Standard Electric Corporation. Device for the antibacklash displacement of objects in a coordinate system. 4,585,193, Cl. 248-49.000.

Rossow, Harold E.: *See*—
Lane, George A.; Rossow, Harold E.; and Teot, Arthur S., 4,585,572, Cl. 252-70.000.

Rotili, Remo. Heating system using wood as the principal source of energy. 4,584,987, Cl. 126-132.000.

Rotork Controls Limited: *See*—
Fry, Jeremy J., 4,584,902, Cl. 74-606.00R.

Rottenkolber, Ludwig; and Schwab, Manfred, to Gustav Magenwirth GmbH & Co. Hydraulic rim brake for bicycles. 4,585,094, Cl. 188-24.220.

Roumegoux, Bernard: *See*—
Tivolle, Alain; Roumegoux, Bernard; Delhaye, Gerard; Codur, Yves; and Mittaine, Bernard, 4,584,746, Cl. 29-81.00B.

Roussel Uclaf: *See*—
Frechet, Daniel; Nedelec, Lucien; Plassard, Guy; and Brown, Neil L., 4,585,770, Cl. 514-214.000.

Rowe, Edward A.: *See*—
Hoyt, Mark; and Rowe, Edward A., 4,586,080, Cl. 358-106.000.

Rowland, Donald G.: *See*—
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,585,802, Cl. 521-92.000.

Rowland, John C.: *See*—
Silver, David A.; and Rowland, John C., 4,585,407, Cl. 425-114.000.

RSF Elektronik Gesellschaft M.B.H.: *See*—
Rieder, Heinz; and Schwaiger, Max, 4,584,773, Cl. 33-125.00C.

Rubin, Leslie S., to Foster-Miller, Inc. Separation system. 4,585,558, Cl. 210-360.100.

Rubin, Mae K., to Mobil Oil Corporation. Synthesis of crystalline silicate ZSM-12. 4,585,637, Cl. 423-328.000.

RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.: *See*—
Speich, Herm H., 4,584,742, Cl. 24-68.0CD.

Rudolph, Andrew W.: *See*—
Schave, Richard D.; McComb, Walter D.; and Rudolph, Andrew W., 4,585,343, Cl. 356-237.000.

Ruegg Chemineebau AG: *See*—
Ruegg, Walter, 4,584,985, Cl. 126-101.000.

Ruegg, Walter, to Ruegg Chemincebau AG. Hot water heating installation. 4,584,985, Cl. 126-101.000.

Ruell, Hartwig: *See*—
DeGeorge, Martin; Ruell, Hartwig; and Welch, John, 4,586,195, Cl. 381-92.000.

Ruhovets, Naum, to Halliburton Company. Method for determining porosity, clay content and mode of distribution in gas and oil bearing shaly sand reservoirs. 4,584,874, Cl. 73-152.000.

Ruhrgas Aktiengesellschaft: *See*—
Pfeiffer, Roland, 4,585,631, Cl. 423-235.000.

Rumburg, Lorri K. Tongue musculature measurement and strengthening apparatus. 4,585,012, Cl. 128-777.000.

Ruyter, Thomas J.: *See*—
Wolters, Tjako A.; Ravesteyn, Cornelis J.; and Ruyter, Thomas J., 4,584,784, Cl. 37-58.000.

Ryan, Thomas G., to Cyclops Corporation. High strength cellular metal floor raceway system. 4,584,803, Cl. 52-221.000.

Ryusyo Industrial Co., Ltd.: *See*—
Kawahara, Akira; and Chiba, Akihiko, 4,584,741, Cl. 24-68.0CD.

Saab-Scania Aktiebolag: *See*—
Knutson, Kjell K. A.; and Dahl, Carl U., 4,585,316, Cl. 350-582.000.

SAB Industri AB: *See*—
Severinsson, Lars M., 4,585,097, Cl. 188-199.000.

Saba, Shinpei: *See*—
Tsukiyama, Tokuhiro; Kondo, Yoshie; Kakuse, Katsuharu; Saba, Shinpei; Ozaki, Syoji; and Itoh, Kunihiro, 4,586,027, Cl. 340-347.0DD.

Saber Technology Corp.: *See*—
Valdez, Frank A., 4,586,004, Cl. 330-300.000.

Sablotsky, Steven, to Key Pharmaceuticals, Inc. Transdermal systemic dosage forms. 4,585,452, Cl. 604-896.000.

Sabo, Karen: *See*—
Sher, Arden; and Sabo, Karen, 4,585,535, Cl. 204-180.600.

Sabol, Albert, to Cooper Industries, Inc. Pinking shears with adjustable tip pressure. 4,584,770, Cl. 30-267.000.

SACE S.p.A. Costrusioni Elettromeccaniche: *See*—
Mostosi, Angelo, 4,586,011, Cl. 335-6.000.

Sachdev, Savinder S.: *See*—
Gossain, Devendra M.; and Sachdev, Savinder S., 4,585,388, Cl. 414-735.000.

Saegusa, Takeo; Sano, Yoshiyuki; Kimura, Yoshiharu; Shinonome, Osami; and Tokuzawa, Taro, to Unitika Ltd. Polymer compositions. 4,585,835, Cl. 525-430.000.

Saeki, Takashi: *See*—
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,586,040, Cl. 340-825.080.

Sager, Thomas B., to Branson Ultrasonics Corporation. Method and apparatus for degating parts using ultrasonic energy. 4,585,152, Cl. 225-1.000.

St. Arnaud, William J.; and Switzer, Israel, to Lincoln Center for the Performing Arts, Inc. Method and apparatus for secure audio channel transmission in a CATV system. 4,586,081, Cl. 358-121.000.

Saito, Kiichi: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.

Saito, Teruo; Asai, Kuniaki; and Kobayashi, Tadayasu, to Sumitomo Chemical Company, Limited. Ovenware molded from wholly aromatic polyester composition. 4,585,823, Cl. 524-456.000.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member comprising (SI-GE)-SI and N. 4,585,719, Cl. 430-59.000.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member having light receiving layer of a-(Si-Ge) and C. 4,585,720, Cl. 430-57.000.

Saitoh, Keishi; Ohnuki, Yukihiko; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member comprising amorphous germanium, amorphous silicon and nitrogen. 4,585,721, Cl. 430-84.000.

Saitto, Antonio; and Mica, Giovanni, to Agence Spatiale Europeenne. Reflector distortion compensation system for multiple-beam wave satellite antennas. 4,586,051, Cl. 343-703.000.

Sakaguchi, Shinji, to Fuji Photo Film Co., Ltd. Photographic image-receiving element for silver salt diffusion transfer process. 4,585,725, Cl. 430-232.000.

Sakakibara, Yasuji: *See*—
Yoneda, Takao; and Sakakibara, Yasuji, 4,584,796, Cl. 51-165.710.

Sakamoto, Satoshi; and Uzuka, Mitsuo, to Sony Corporation. Three-phase brushless motor having auxiliary magnetic pole on rotor. 4,585,979, Cl. 318-254.000.

Sakane, Kazuo: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Gotto, Jiro, 4,585,872, Cl. 548-128.000.

Sakata, Yoshiya: *See*—
Okamura, Masatoshi; Shiba, Haruo; Hashizume, Kenji; and Sakata, Yoshiya, 4,585,187, Cl. 242-198.000.

Sakka, Kenji; Inui, Taiji; Okura, Ryoichi; Kanazawa, Masao; and Takeda, Yasushi, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Method of and apparatus for deaerating condensate in power generating steam turbine plant. 4,584,837, Cl. 60-646.000.

Sakurai, Yoshimi: *See*—
Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, 4,584,908, Cl. 74-866.000.

Salk Institute for Biological Studies, The: *See*—
Brazeau, Paul E., Jr.; Bohlen, Peter; Esch, Frederick S.; Ling, Nicholas C.; and Guillemin, Roger C. L., 4,585,756, Cl. 514-12.000.

Sameshima, Yoriko: *See*—
Uedaira, Satoru; Sameshima, Yoriko; and Tamura, Hidemasa, 4,585,718, Cl. 429-224.000.

Samuel, Billy P.: *See*—
Koshoffer, John M.; Ekstedt, Edward E.; Samuel, Billy P.; and Stamm, Edward L., 4,584,834, Cl. 60-737.000.

Sanders Associates, Inc.: *See*—
Bronson, Bruce A.; and Vanetik, Anatoly, 4,585,139, Cl. 220-256.000.
Cann, Alfred J., 4,585,960, Cl. 307-490.000.

Sandoz Ltd.: *See*—
Devoise-Lambert, Andre ; and Gisi, Ulrich, 4,585,763, Cl. 514-141.000.

Sangl, Reinhard: *See*—
Fischer, Elmar; Sangl, Reinhard; and Herma, Paul, 4,585,912, Cl. 200-144.00R.

Sannomiya, Kunio: *See*—
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.

Sano, Yasuro, to Janome Sewing Machine Co. Ltd. Fine-feed adjusting device of a sewing machine. 4,584,955, Cl. 112-315.000.

Sano, Yoshiyuki: *See*—
Saegusa, Takeo; Sano, Yoshiyuki; Kimura, Yoshiharu; Shinonome, Osami; and Tokuzawa, Taro, 4,585,835, Cl. 525-430.000.

Sansui Electric Co., Ltd.: *See*—
Yamamoto, Takaaki, 4,585,952, Cl. 307-268.000.

Sanyo Electric Co., Ltd.: *See*—
Nakai, Hideyuki, 4,585,988, Cl. 323-285.000.
Nishimura, Satoshi, 4,586,191, Cl. 381-31.000.

Saresearch Corporation: *See*—
Tietge, Fred R.; and Sargent, Ronald J., 4,584,733, Cl. 15-1.700.

Sargent, Ronald J.: *See*—
Tietge, Fred R.; and Sargent, Ronald J., 4,584,733, Cl. 15-1.700.

Sasaki, Kiyotaka; Tachi, Ryosuke; and Iwamoto, Katsunori, to Nippondenso Co., Ltd. Method and apparatus for controlling spark timing in internal combustion engines. 4,584,978, Cl. 123-417.000.

Sasaki, Shigeru: *See*—
Harada, Haruhisa; Maki, Hiroshi; and Sasaki, Shigeru, 4,585,896, Cl. 564-403.000.

Sasano, Mitsunori: *See*—
Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, 4,585,028, Cl. 137-625.480.

Sasayama, Takao, to Hitachi, Ltd. Semiconductor switching device utilizing bipolar and MOS elements. 4,585,962, Cl. 307-570.000.

Sato, Hirotsugu: *See*—
Morinaka, Akira; Oikawa, Shigeru; and Sato, Hirotsugu, 4,585,722, Cl. 430-201.000.

Sato, Jun; and Nakajima, Hideki, to Shimano Industrial Company Limited. Fishing reel. 4,585,188, Cl. 242-219.000.

Sato, Keiji: *See*—
Kishi, Ken-ichi; Sato, Keiji; Kasuya, Takahira; Ito, Kunio; and Wada, Tsuneo, 4,585,723, Cl. 430-106.000.

Sato, Kensaku: *See*—
Ogawa, Shingo; Miyahira, Hitoshi; Sato, Kensaku; Kawamura, Yoshio; Kaida, Hirosi; and Itoh, Yoshizi, 4,584,766, Cl. 29-755.000.

Sato, Nobuo: *See*—
Kaneyasu, Masayoshi; Noro, Takanobu; Arima, Hideo; Ito, Mitsuko; Iwanaga, Shoichi; Sato, Nobuo; Ikegami, Akira; and Isogai, Tokio, 4,586,143, Cl. 364-509.000.

Sato, Yoshinori: *See*—
Fujimura, Akira; and Sato, Yoshinori, 4,584,979, Cl. 123-438.000.

Satomura, Masato: *See*—
Ikeda, Kensuke; Iwakura, Ken; and Satomura, Masato, 4,585,483, Cl. 106-21.000.

Sauer, Hartmut K., to De La Rue Giori SA. Device for fastening one extremity of a soft and foldingproof blanket on a cylinder of a rotary printing machine. 4,584,942, Cl. 101-415.100.

Sauer, Joseph: *See*—
Eschrich, Gerhard; Muller, Alfred; Sauer, Joseph; and Schreiber, Achim, 4,584,905, Cl. 74-861.000.

Saunders, Charles A. Bow sight. 4,584,777, Cl. 33-265.000.

Saunders, Peter R.: *See*—
Haylock, John C.; Saunders, Peter R.; Turner, Garland L.; and Twilley, Ian C., 4,585,464, Cl. 51-298.000.

Saunders, Ralph B.: *See*—
Granzow, Robert H.; Horst, William R.; Hale, William J.; and Saunders, Ralph B., 4,585,144, Cl. 221-7.000.

Saunders, Stephen W.: *See*—
Kremer, Ross A.; and Saunders, Stephen W., 4,585,629, Cl. 423-167.000.

Saunders, William T., to Weirton Steel Corporation. In-line control during draw-redraw of one-piece sheet metal can bodies. 4,584,859, Cl. 72-43.000.

Savin Corporation: *See*—
Landa, Benzion, 4,585,329, Cl. 355-3.00R.
Sher, Arden; and Sabo, Karen, 4,585,535, Cl. 204-180.600.

Sawada, Akashi: *See*—
Hayafuji, Yoshinori; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,585,512, Cl. 156-617.00R.

Saykowski, Franz; Wurminghausen, Thomas; Stattlegger, Hans; and Achtenberg, Theo, to Bayer Aktiengesellschaft. RTV Silicone pastes. 4,585,849, Cl. 528-17.000.

Scallan, L. Joe, to Pro-Guard, Inc. Method of applying theft-deterrent indicia. 4,585,514, Cl. 156-631.000.

Schacht, Hans: *See*—
Haas, Wolfgang; Muller, Willi; Schacht, Hans; and Scholz, Erich, 4,585,022, Cl. 137-172.000.

Schaub, Peter: *See*—
Andersson, Bjorn; Engding, Alf; Schaub, Peter; and Agoston, Andras, 4,585,610, Cl. 376-249.000.

Schave, Richard D.; McComb, Walter D.; and Rudolph, Andrew W., to Libbey-Owens-Ford Company. Apparatus and method for inspecting glass. 4,585,343, Cl. 356-237.000.

Schering Aktiengesellschaft: *See*—
Klose, Walter; and Boettcher, Irmgard, 4,585,771, Cl. 514-220.000.

Schetina, Otto: *See*—
Wrulich, Herwig; Zitz, Alfred; Schetina, Otto; and Schoffmann, Franz, 4,585,275, Cl. 299-81.000.

Schiller, Thomas H.; and Bennett, Aubert E., to Viking Phone Company. Cordless telephone. 4,585,903, Cl. 179-2.0EA.

Schilling, Bernd: *See*—
Deinhammer, Wolfgang; and Schilling, Bernd, 4,585,863, Cl. 544-319.000.

Schiminski, Herbert: *See*—
Schippers, Heinz; Lenk, Erich; Schiminski, Herbert; and Turk, Herbert, 4,585,181, Cl. 242-43.00A.

Schindler, Georg: *See*—
Zlokarnik, Marko; Schindler, Georg; Koepke, Gunther; and Stracke, Werner, 4,585,561, Cl. 210-705.000.

Schinitsky, Michael R.: *See*—
Meixner, Lorraine F.; and Schinitsky, Michael R., 4,585,754, Cl. 514-8.000.

Schippers, Heinz; Lenk, Erich; Schiminski, Herbert; and Turk, Herbert, to Barmag Barmer Maschinenfabrik AG. Yarn traverse apparatus. 4,585,181, Cl. 242-43.00A.

Schlemper, Eberhard: *See*—
Auch, Wilfried; and Schlemper, Eberhard, 4,585,347, Cl. 356-350.000.

Schlich, William R.: *See*—
Lo, Jhy-Dou R.; and Schlich, William R., 4,585,852, Cl. 528-185.000.

Schmaderer, Franz: *See*—
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.

Schmidt, Erich, to MZW Maschinenfabrik GmbH. Turning tool for turning wooden workpieces. 4,585,043, Cl. 144-218.000.

Schmidt, Harald; Morell, Josef; Herdin, Gunther; and Freudenschuss, Otto, to Steyr-Daimler-Puch Aktiengesellschaft. Fuel injection unit for a diesel engine cylinder. 4,585,171, Cl. 239-88.000.

Schmidt, Richard A.: *See*—
Lue, Tom P.; Tanagho, Emil A.; and Schmidt, Richard A., 4,585,005, Cl. 128-419.00R.

Schmidt, Robert R.: *See*—
Forster, Heinz; Hofer, Wolfgang J., deceased; Schmidt, Robert R.; and Eue, Ludwig, 4,585,471, Cl. 71-90.000.
Forster, Heinz; Klauke, Erich; Priesnitz, Uwe; Riebel, Hans-Jochem; Eue, Ludwig; and Schmidt, Robert R., 4,585,870, Cl. 546-302.000.

Schmidt, Rudolf: *See*—
Preis, Lothar; Schmidt, Rudolf; Esser, Josef; and Magg, Hans, 4,585,811, Cl. 523-206.000.

Schmolka, Irving R., to BASF Corporation. Methods and compositions for intravaginal contraception. 4,585,647, Cl. 424-45.000.

Schneider, George W., Jr.: *See*—
Jacobsen, Robert S.; and Schneider, George W., Jr., 4,584,868, Cl. 73-23.000.

Schneider, Michael; and Kochloefl, Karel, to Sud-Chemie Aktiengesellschaft. Process for the removal of nitrogen oxides from exhaust gases. 4,585,632, Cl. 423-239.000.

Schneider, Richard T., to United States of America, Air Force. High efficiency fiber-shaped detector. 4,585,937, Cl. 250-227.000.

Schneider, Richard T.; and Long, James F., to United States of America, Air Force. Non-scanning integrated optical system with wide field of view search capability. 4,585,948, Cl. 250-578.000.

Schnorr, Peter C.: *See*—
Butts, H. Bruce, Jr.; Cutler, David N.; Schnorr, Peter C.; and Short, Robert T., 4,586,130, Cl. 364-200.000.

Schnurer, Otmar, to Volkswagenwerk Aktiengesellschaft. Pressure-operated brake system for automobiles. 4,585,281, Cl. 303-116.000.

Schoen, Josef, to Siemens Aktiengesellschaft. Guide sleeve for light waveguide plug devices utilizing a sliding sleeve for wiping pin shaped bodies. 4,585,302, Cl. 350-96.200.

Schoffmann, Franz: *See*—
Wrulich, Herwig; Zitz, Alfred; Schetina, Otto; and Schoffmann, Franz, 4,585,275, Cl. 299-81.000.

Scholz, Erich: *See*—
Haas, Wolfgang; Muller, Willi; Schacht, Hans; and Scholz, Erich, 4,585,022, Cl. 137-172.000.

Schoner, Ronald G.: *See*—
Lovett, Paul S.; and Schoner, Ronald G., 4,585,739, Cl. 435-253.000.

Schonhausen, Horst. Apparatus for the preparation and application in situ of blends of structural material. 4,585,353, Cl. 366-11.000.

Schoon, David J., to Minnesota Mining and Manufacturing Company. Compensation circuitry for a laser printer using a self-resonant scanner. 4,586,057, Cl. 346-108.000.

Schoumacher, Marcel: *See*—
Faure, Jean L.; and Schoumacher, Marcel, 4,584,830, Cl. 57-328.000.

Schreiber, Achim: *See*—
Eschrich, Gerhard; Muller, Alfred; Sauer, Joseph; and Schreiber, Achim, 4,584,905, Cl. 74-861.000.

Schreiber, Max: *See*—
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,584,951, Cl. 112-97.000.

Schroeder, Ted E.: *See*—
Bult, Roelof P.; Schroeder, Ted E.; and Needham, James G., 4,585,511, Cl. 156-607.000.

Schroter, Klaus: *See*—
Katterbach, Helmut; Schroter, Klaus; and Daniel, Johannes, 4,584,747, Cl. 29-121.500.

Schubart, Rudiger: *See*—
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Schubart, Rudiger, 4,585,856, Cl. 528-388.000.

Schuetz, Helmut: *See*—
Gale, Michael T.; Ebnother, Martin; and Schuetz, Helmut, 4,585,513, Cl. 156-630.000.

Schuhmann, Siegfried: *See*—
Rehder, Jurgen; Schuhmann, Siegfried; and Steiner, Gerd, 4,586,148, Cl. 364-550.000.

Schulz, Donald N.; and Kaladas, Jeffrey J., to Exxon Research and Engineering Co. Cyclopolymerizable sulfobetaine monomer. 4,585,846, Cl. 526-264.000.

Schuster, Friedrich; and Paul, Gunther, to FAG Kugelfischer Georg Schafer KGaA. Device for the false twisting of threads by means of friction disks. 4,584,831, Cl. 57-339.000.

Schwab, Manfred: *See*—
Rottenkolber, Ludwig; and Schwab, Manfred, 4,585,094, Cl. 188-24.220.

Schwaiger, Gunther: *See*—
Opitz, Konrad; and Schwaiger, Gunther, 4,585,459, Cl. 8-527.000.

Schwaiger, Max: *See*—
Rieder, Heinz; and Schwaiger, Max, 4,584,773, Cl. 33-125.00C.

Schwander, Hansrudolf; Markert, Jurgen; and Aeschlimann, Peter, to Ciba-Geigy Corporation. Reactive dyes, process for their preparation and use thereof: bis-vinyl or substituted ethyl sulphenyl azo reactive dyes for textiles. 4,585,460, Cl. 8-549.000.

Schwarz, Alois; and Mautz, Karlheinz, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for adjusting the tracking of the blades in a rotor, especially for a rotary wing aircraft. 4,585,394, Cl. 416-138.000.

Schwarz, James A.; and Pasco, Robert W., to Syracuse University. Hydrogen charged thin film conductor. 4,585,672, Cl. 427-88.000.

Schwenk, Siegfried; Hossler, Andreas; Heyke, Klaus; and Wallrauch, Alexander, to Robert Bosch GmbH. Semiconductor rectifier. 4,586,075, Cl. 357-74.000.

Schwerdt, Paul: *See*—
Weiger, Gunter; Dorrie, Dieter; and Schwerdt, Paul, 4,584,980, Cl. 123-458.000.

Schwob, Pierre, to SEB S.A. Retractable winder for storing the power cord of an electric flat-iron and an electric flat-iron equipped with a winder of this type. 4,585,194, Cl. 248-52.000.

SCM Corporation: *See*—
Brown, George L.; de Sorgo, Miksa; and Spencer, Arthur T., 4,585,813, Cl. 523-409.000.
Gray, R. William, 4,585,362, Cl. 400-697.100.

Scott, Aaron; and Scott, Barbara F. Liquid charcoal and a method of preparing the same. 4,585,753, Cl. 502-401.000.

Scott, Barbara F.: *See*—
Scott, Aaron; and Scott, Barbara F., 4,585,753, Cl. 502-401.000.

Scott, Eric J. Y.: *See*—
Bowes, Emmerson; Farcasiu, Malvina; and Scott, Eric J. Y., 4,585,546, Cl. 208-253.000.

Sealed Air Corporation: *See*—
Fielding, Alfred W.; Bertram, George T.; Krislav, Semyon; and Askinazi, Joel, 4,584,822, Cl. 53-452.000.

Sealy of Maryland and Virginia, Inc.: *See*—
Reiss, Bernard; and Ward, Irl E., 4,584,727, Cl. 5-13.000.

Sears, Roebuck and Co.: *See*—
Gall, John C., 4,585,367, Cl. 403-104.000.

SEB S.A.: *See*—
Schwob, Pierre, 4,585,194, Cl. 248-52.000.

Seco/Warwick Corporation: *See*—
Ross, Robert H., 4,585,412, Cl. 432-148.000.

Seebach, Dieter; and Naef, Reto, to Degussa Aktiengesellschaft. Process for the enantioselective production of α-alkylated, acyclic α-aminocarboxylic acids. 4,585,892, Cl. 562-443.000.

Seiber, Arvie I. Double angled precision file. 4,584,745, Cl. 29-78.000.

Seidensticker, Jens: *See*—
Vavra, Norbert; and Seidensticker, Jens, 4,584,943, Cl. 102-214.000.

Seifert, Dieter. Tracking device. 4,585,318, Cl. 353-3.000.

Seiler, Norman C.; and Walker, Stephen S., to Harris Corporation. Formant-based speech synthesizer. 4,586,193, Cl. 381-51.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Epoxy-maleate-phosphate copolymers. 4,585,814, Cl. 523-416.000.

Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, to Nissan Motor Company, Limited. Warning system for dozing at wheel. 4,586,032, Cl. 340-576.000.

Sekula, John A.: *See*—
French, Donald E.; and Sekula, John A., 4,585,934, Cl. 250-211.00J.

Self, Dolty R., to Enhancement Systems, Inc. Power enhancer. 4,586,122, Cl. 363-126.000.

Selfix, Inc.: *See*—
Chap, John P., 4,585,199, Cl. 248-359.000.

Sellier, Christian, to Mecelec. Optical process for determining the dimensions of an object in relative movement, and more particularly of a coin in a pre-payment apparatus. 4,585,936, Cl. 250-223.00R.

Semenets, Valery I.: *See*—
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.

Sengoku, Kouji: *See*—
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,585,665, Cl. 426-634.000.

Senoo, Yoji, to Sharp Kabushiki Kaisha. Power control of electronic apparatus in response to surrounding brightness. 4,585,339, Cl. 355-69.000.

Sensormedics Corporation: *See*—
Stillman, Gerald T.; Pawlowski, Michael; and McDavid, Larry S., 4,586,149, Cl. 364-557.000.

Seton Company: *See*—
Cioca, Gheorghe, 4,585,797, Cl. 514-773.000.

Severinsson, Lars M., to SAB Industri AB. Slack adjuster, especially for a rail vehicle brake system. 4,585,097, Cl. 188-199.000.

SFE Technologies: *See*—
Cichanowski, Stanley W., 4,586,111, Cl. 361-323.000.

Sgrignoli, Gary J.: *See*—
Citta, Richard W.; Sgrignoli, Gary J.; and Mutzabaugh, Dennis M., 4,586,078, Cl. 358-86.000.

Shackle, Peter W.: *See*—
Hartman, Adrian R.; Murphy, Bernard T.; Riley, Terence J.; and Shackle, Peter W., 4,586,073, Cl. 357-45.000.

Shaffer, Howard R.: *See*—
Wolowicz, James P.; and Shaffer, Howard R., 4,585,294, Cl. 339-252.00R.

Shaffer, James E.: *See*—
Distin, Robert G., Jr.; and Shaffer, James E., 4,584,904, Cl. 74-804.000.

Shah, Ashwin H., to Texas Instruments Incorporated. SRAM with improved sensing circuit. 4,586,166, Cl. 365-154.000.

Shah, Girish B.: *See*—
Zemke, Edward H., deceased; Pogue, Harold D.; Shah, Girish B.; and Bowles, Myron A., 4,585,220, Cl. 270-54.000.

Shah, Raj: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,585,814, Cl. 523-416.000.

Shalyapin, Mikhail I.: *See*—
Alexandrov, Vladimir M.; Rabinov, Anatoly I.; Shalyapin, Mikhail I.; and Jutkevich, Valery I., 4,585,078, Cl. 173-93.500.

Shannon, William M.: *See—*
Tice, Thomas R.; Meyers, William E.; Gilley, Richard M.; and Shannon, William M., 4,585,482, Cl. 106-15.050.
Sharp, James M., Jr., to ITT Corporation. Release mechanism in key assembly. 4,584,897, Cl. 74-483.0PB.
Sharp Kabushiki Kaisha: *See—*
Kurata, Kazuyuki; Motoki, Kiyozi; and Yamada, Yoshihiro, 4,586,156, Cl. 364-900.000.
Nishibori, Toshiki; Kita, Sumio; and Kamada, Hiroshi, 4,585,222, Cl. 271-106.000.
Nonomura, Keisaku; Funada, Fumiaki; and Matsuura, Masataka, 4,586,039, Cl. 340-784.000.
Senoo, Yoji, 4,585,339, Cl. 355-69.000.
Tanaka, Toyoki, 4,585,336, Cl. 355-3.0SH.
Yamagishi, Toshio, 4,585,333, Cl. 355-14.00R.
Yamamoto, Kazushi; and Tanaka, Toyoki, 4,585,330, Cl. 355-3.00R.
Shaw, Arthur B.: *See—*
Landaburu, Ricardo H.; Amphlett, Godfrey W.; Branson, Roy E.; and Shaw, Arthur B., 4,585,654, Cl. 424-101.000.
Shaw-Walker Company, The: *See—*
Beisswanger, David A., 4,585,253, Cl. 283-39.000.
Shay, Jonathan. Shakeable shutoff alarm clock. 4,585,358, Cl. 368-262.000.
Shell Oil Company: *See—*
Collipp, Bruce G., 4,585,373, Cl. 405-224.000.
Moore, Boyd B.; Vanmeurs, Peter; and Van Egmond, Cor F., 4,585,066, Cl. 166-385.000.
Shelton, William S., to Joy Manufacturing Company. Expanding gate valve with pneumatic actuator. 4,585,207, Cl. 251-62.000.
Shenoy, Vittal U., to Xerox Corporation. Electrophotographic printing machine with means for sensing size of document. 4,585,332, Cl. 355-14.00R.
Shepard, Kenneth L., to Merck & Co., Inc. 5-[2(Or 3)-hydroxyphenylsulfonyl]thiophene-2-sulfonamides for the topical treatment of elevated intraocular pressure. 4,585,787, Cl. 514-445.000.
Shepherd, Daniel R. Telescopic gun sight. 4,584,776, Cl. 33-246.000.
Sheppard, Lisa K.; and Darnell, Douglas. Automobile board game having unique color code dice. 4,585,232, Cl. 273-248.000.
Sher, Arden; and Sabo, Karen, to Savin Corporation. Electrophoretic method of producing high-density magnetic recording media. 4,585,535, Cl. 204-180.600.
Sherbanenko, Mykola. Method for coloring natural casings and product thereof. 4,585,655, Cl. 426-106.000.
Shiba, Haruo: *See—*
Okamura, Masatoshi; Shiba, Haruo; Hashizume, Kenji; and Sakata, Yoshiya, 4,585,187, Cl. 242-198.000.
Shibata, Akikazu: *See—*
Hayafuji, Yoshinori; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,585,512, Cl. 156-617.00R.
Shibata, Isamu: *See—*
Hamaguchi, Iwao; and Shibata, Isamu, 4,585,297, Cl. 350-6.800.
Shibata, Noriyoshi: *See—*
Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, 4,585,028, Cl. 137-625.480.
Shigihara, Kunio: *See—*
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.
Shikano, Hiroshi; and Harada, Tsutomu. Refractory sliding nozzle plate. 4,585,485, Cl. 106-38.900.
Shiley, Incorporated: *See—*
Martin, Richard L.; and Baranowski, Michael B., 4,585,453, Cl. 623-2.000.
Shimadzu Corporation: *See—*
Tsuji, Fumio, 4,586,190, Cl. 377-10.000.
Shimano Industrial Company Limited: *See—*
Sato, Jun; and Nakajima, Hideki, 4,585,188, Cl. 242-219.000.
Shimazaki, Norihiko: *See—*
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,585,762, Cl. 514-129.000.
Shimizu, Masao, to Takeda Riken Co., Ltd. Test pattern generating apparatus. 4,586,181, Cl. 371-27.000.
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Kuroda, Takao; and Shimizu, Ryuji, 4,586,050, Cl. 343-426.000.
Shimotori, Kazuhiro: *See—*
Fujishima, Kazuyasu; Shimotori, Kazuhiro; Ozaki, Hideyuki; and Miyatake, Hideshi, 4,586,167, Cl. 365-189.000.
Shinko Denshi Company Ltd.: *See—*
Nishiguchi, Yuzuru, 4,585,083, Cl. 177-229.000.
Shinonome, Osami: *See—*
Saegusa, Takeo; Sano, Yoshiyuki; Kimura, Yoshiharu; Shinonome, Osami; and Tokuzawa, Taro, 4,585,835, Cl. 525-430.000.
Shirley, Graham J., to Automotive Products plc. Annular slave cylinder for motor vehicle clutch control mechanism. 4,585,106, Cl. 192-85.0CA.
Shirley, Graham J.; and Leigh-Monstevens, Keith V., to Automotive Products plc. Motor vehicle clutch control mechanism. 4,585,109, Cl. 192-85.0CA.
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Chung, Michael S.; and Shoji, Masakazu, 4,585,958, Cl. 307-473.000.
Short, Robert T.: *See—*
Butts, H. Bruce, Jr.; Cutler, David N.; Schnorr, Peter C.; and Short, Robert T., 4,586,130, Cl. 364-200.000.
Showa Electric Wire & Cable Co., Ltd: *See—*
Furuta, Katsuhisa; Nakamura, Yoshinori; and Asaka, Kazuhiko, 4,585,603, Cl. 264-40.600.
Shuford, David M., to LTV Aerospace and Defense Company. Alumina silicon carbide, and silicon primary protcctive coatings for carbon-carbon substrates. 4,585,675, Cl. 427-376.200.
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Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.
Siadat, Bahram: *See—*
Colarusso, Peter C.; and Siadat, Bahram, 4,585,682, Cl. 428-57.000.
Siegel, Carole E.: *See—*
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., 4,585,783, Cl. 514-408.000.
Siemens Aktiengesellschaft: *See—*
Anders, Horst-Gunther; and Diepold-Scharnitzky, Rudolf, 4,586,180, Cl. 371-14.000.
Fischer, Elmar; Sangl, Reinhard; and Herma, Paul, 4,585,912, Cl. 200-144.00R.
Haendle, Joerg, 4,586,085, Cl. 358-244.000.
Schoen, Josef, 4,585,302, Cl. 350-96.200.
Siemens Corporate Research & Support, Inc.: *See—*
DeGeorge, Martin; Ruell, Hartwig; and Welch, John, 4,586,195, Cl. 381-92.000.
Siemon Company, The: *See—*
Knickerbocker, Robert H.; and Thomas, Stephen M., 4,585,290, Cl. 339-97.00R.
Siga, Masao: *See—*
Yoshioka, Takatoshi; Kirihara, Seishin; Siga, Masao; Kuriyama, Mitsuo; Yoshida, Takehiko; and Murohoshi, Takanori, 4,585,478, Cl. 75-124.000.
Sigai, A. Gary, to GTE Laboratories Incorporated. Method for coating phosphor particles. 4,585,673, Cl. 427-213.000.
Sih, John C., to Upjohn Company, The. 9-Substituted carbacyclin analogs. 4,585,886, Cl. 556-441.000.
Sikes, C. Steven; and Wheeler, A. P., to University of South Alabama, a Public Body Corporate. Inhibition of inorganic and biological $CaCO_3$ deposition by a polysaccharide fraction obtained from Ca-CO_3-forming organisms. 4,585,560, Cl. 210-698.000.
Silberstein, Donald A., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,585,015, Cl. 131-339.000.
Silver, David A.; and Rowland, John C., to Pirelli Cable Corporation. Guide for electric cable insulation extrusion head. 4,585,407, Cl. 425-114.000.
Silver, Jack: *See—*
Hider, Robert C.; Kontoghiorghes, George; and Silver, Jack, 4,585,780, Cl. 514-348.000.
Simington, Jack F., to Simington Products Company. Grinding machine for cutters in saw chain. 4,584,910, Cl. 76-40.000.
Simington Products Company: *See—*
Simington, Jack F., 4,584,910, Cl. 76-40.000.
Simmons, Thomas E.; Innis, Charles L.; and DiVirgilio, Ralph F., to Morgan Construction Company. Double jointed coolant seal. 4,585,236, Cl. 277-38.000.
Simms, Mark D. Introducer for an umbilical artery catheter. 4,585,437, Cl. 604-106.000.
Simon, Howard E.: *See—*
Maudsley, Andrew A.; Hilal, Sadek K.; and Simon, Howard E., 4,585,992, Cl. 324-309.000.
Sims, Edward M.; and Chandler, Jimmy E., to General Electric Company. True-perspective texture/shading processor. 4,586,038, Cl. 340-729.000.
Sincerbox, Glenn T.; Werlich, Harald W.; and Yung, Bwo-Han, to International Business Machines Corporation. Brightfield/darkfield microscope illuminator. 4,585,315, Cl. 350-525.000.
Sinclair, A. Richard: *See—*
Graham, John W.; and Sinclair, A. Richard, 4,585,064, Cl. 166-280.000.
Sinclair Research Ltd.: *See—*
Pye, Michael R., 4,586,001, Cl. 330-267.000.
Singer Company, The: *See—*
Berry, David N., 4,586,154, Cl. 364-748.000.
Ljung, Bo H. G., 4,585,346, Cl. 356-350.000.
Singer, Mark. Support structure for a piece of furniture. 4,585,270, Cl. 297-16.000.
Sinnott, Kenneth M., to W. R. Grace & Co. Screw closure. 4,585,135, Cl. 215-329.000.
Sipra Patententwicklungs-und Beteiligungsgesellschaft: *See—*
Plath, Ernst-Dieter, 4,584,851, Cl. 66-104.000.
Sirazi, Semir; and Zinger, Thomas E., to Zenith Electronics Corporation. Microprocessor reset with power level detection and watchdog timer. 4,586,179, Cl. 371-12.000.
Sitta, Jaroslav; Kopka, Karll; Petrik, Frantisek; and Vyjidacek, Kvetoslav, to Mez Mohelnice narodni podnik. Method of and apparatus for handling permanent molds. 4,585,049, Cl. 164-324.000.
SKF Kugellagerfabriken GmbH: *See—*
Horling, Peter; Klupfel, Norbert; Dobhan, Herbert; and Dibal, Volker, 4,584,749, Cl. 29-148.40C.
SKF Steel Engineering AB: *See—*
Tiberg, Jan, 4,585,062, Cl. 166-244.100.
Skil Nederland B.V.: *See—*
Wanninkhof, Peter; and Moolenaar, Antonie J., 4,584,797, Cl. 51-170.0EB.

Skiles, Jerry W.: *See*—
Huang, Fu-chih; Suh, John T.; and Skiles, Jerry W., 4,585,758, Cl. 514-19.000.

Skoda, Raymond E., to General Electric Company. Permanent thermomagnetic recording of binary digital information. 4,586,161, Cl. 365-122.000.

Skotheim, Terje, to United States of America, Energy. Polymer blends for use in photoelectrochemical cells for conversion of solar energy to electricity. 4,585,581, Cl. 252-518.000.

Skovajsa, Joseph, to Societe Invo Plastic S.A.R.L. Device for gripping articles for robot-type manipulator. 4,585,260, Cl. 294-145.000.

SKW Trostberg Aktiengesellschaft: *See*—
Plank, Johann; and Aignesberger, Alois, 4,585,853, Cl. 528-227.000.

Slagle, Grady M., Jr.; and Swaim, Raymond J., to Armco Inc. Well derrick. 4,585,213, Cl. 254-386.000.

Smedley, William H.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 4,584,990, Cl. 128-1.00R.

Smith, Harry D., Jr.: *See*—
Arnold, Dan M.; and Smith, Harry D., Jr., 4,585,939, Cl. 250-256.000.

Smith International, Inc.: *See*—
Hendrick, Fred W., 4,585,025, Cl. 137-315.000.

Smith, Louis W., to GTE Communication Systems Corporation. Data entry and display control circuit. 4,585,908, Cl. 179-81.00C.

Smith and Nephew Associated Companies Limited: *See*—
Harris, Christopher, 4,585,444, Cl. 604-177.000.

Smith, Raymond L.: *See*—
Parsons, John M.; Smith, Raymond L.; and Wynn, James A., Jr., 4,586,087, Cl. 358-246.000.

Smits, Gerard: *See*—
Keulemans, Cornelis N. M.; and Smits, Gerard, 4,585,593, Cl. 260-410.700.

Snodgrass, Anthony D.: *See*—
Cloudy, Westley R.; Britton, Robert E.; and Snodgrass, Anthony D., 4,584,849, Cl. 62-380.000.

Snyder, Kurt I., to Westinghouse Electric Corp. Self-contained underwater drainage system. 4,585,946, Cl. 250-506.100.

Societe Anonyme Dite: Les Cables de Lyon: *See*—
Bocher, Jean L., 4,585,289, Cl. 339-89.00C.

Societe Chimique des Charbonnages S.A.: *See*—
Bujadoux, Karel; and Neyer, Jean-Marie, 4,585,839, Cl. 526-114.000.

Societe d'Applications Generales: *See*—
Chevrollier, Guy, 4,584,890, Cl. 74-113.000.

Societe de Conseils de Recherches et d'Applications Scientifiques (S.C.R.A.S.): *See*—
Esanu, Andre , 4,585,776, Cl. 514-302.000.

Societe de Developpement de Materiels D'Emballage - Sodeme: *See*—
Maryase, Yves, 4,585,432, Cl. 493-59.000.

Societe de Paris et du Rhone: *See*—
Cambrodon, Francisco, 4,585,968, Cl. 310-239.000.

Societe Invo Plastic S.A.R.L.: *See*—
Skovajsa, Joseph, 4,585,260, Cl. 294-145.000.

Societe Lorraine et Meridionale de Laminage Continu - SOLMER: *See*—
Tivolle, Alain; Roumegoux, Bernard; Delhaye, Gerard; Codur, Yves; and Mittaine, Bernard, 4,584,746, Cl. 29-81.00B.

Societe Nationale Industrielle Aerospatiale: *See*—
Pathe, Claude; Darmois, Jean; and Nee, Claude, 4,585,713, Cl. 429-112.000.

Societe Nationale Industrielle et Aerospatiale: *See*—
Vuillet, Alain; and Morelli, Francoise J., 4,585,391, Cl. 415-210.000.

Soclof, Sidney I., to Rockwell International Corporation. Lateral transistor separated from substrate by intersecting slots filled with substrate oxide for minimal interference therefrom and method for producing same. 4,584,762, Cl. 29-577.00R.

Soejima, Shigeo: *See*—
Mase, Syunzo; and Soejima, Shigeo, 4,585,499, Cl. 156-89.000.

Soil Machine Dynamics Limited: *See*—
Grinstead, Timothy W.; and Reece, Alan R., 4,585,372, Cl. 405-159.000.

Solvay & Cie (Societe Anonyme): *See*—
Dehennau, Claude, 4,585,694, Cl. 428-355.000.

Somar Corporation: *See*—
Obayashi, Toshio, 4,585,509, Cl. 156-497.000.

Sone, Takanori: *See*—
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, 4,585,869, Cl. 546-187.000.

Sonoda, Sakae: *See*—
Tohmata, Eisuke; Takahashi, Ryoichiro; Sonoda, Sakae; Okamoto, Shoji; and Furuyama, Osamu, 4,585,564, Cl. 252-32.500.

Sony Corporation: *See*—
Fukuju, Yukio; and Niiro, Makoto, 4,586,093, Cl. 360-73.000.
Hayafuji, Yoshinori; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,585,512, Cl. 156-617.00R.
Sakamoto, Satoshi; and Uzuka, Mitsuo, 4,585,979, Cl. 318-254.000.
Uedaira, Satoru; Sameshima, Yoriko; and Tamura, Hidemasa, 4,585,718, Cl. 429-224.000.
Wilkinson, James H., 4,586,082, Cl. 358-160.000.
Wilkinson, James H., 4,586,183, Cl. 371-39.000.

Sophy, Yvon: *See*—
Casselman, Chantal; Malet, Jean C.; Sophy, Yvon; and Pacton, Roger, 4,584,802, Cl. 52-169.700.

Soubie, Alain: *See*—
Bruel, Michel; Soubie, Alain; and Spinelli, Philippe, 4,585,945, Cl. 250-492.200.

Soule, Lincoln S., to Bete Fog Nozzle, Inc. Pressure activated conical spray nozzle. 4,585,173, Cl. 239-453.000.

Soundcraft, Inc.: *See*—
Casden, Martin, 4,585,930, Cl. 235-449.000.

Southern Research Institute: *See*—
Tice, Thomas R.; Meyers, William E.; Gilley, Richard M.; and Shannon, William M., 4,585,482, Cl. 106-15.050.

Soyama, Kazuya; Nakamura, Takashi; and Yamaura, Yutaka, to Mitsubishi Denki Kabushiki Kaisha. Detector for use on sewing machines. 4,584,954, Cl. 112-275.000.

Sozio, Ralph B.; and Riley, Edwin J., to Coors Porcelain Company. Dental appliance and method of manufacture. 4,585,417, Cl. 433-202.100.

Spanset Inter AG: *See*—
von Danwitz, Hans-Otto, 4,584,785, Cl. 40-316.000.

Spar Aerospace Limited: *See*—
Gossain, Devendra M.; and Sachdev, Savinder S., 4,585,388, Cl. 414-735.000.

Sparks, Dilmus L. Forced air rain diverter. 4,585,242, Cl. 280-153.00R.

Speakman Company: *See*—
Formentos, Paul J., 4,585,175, Cl. 239-553.000.

Spear, Dean M.: *See*—
Raley, Garland E.; and Spear, Dean M., 4,585,156, Cl. 228-132.000.

Spector, George: *See*—
Testa, Victor, Sr; and Spector, George, 4,585,244, Cl. 280-260.000.

Speich, Herrn H., to RUD-Kettenfabrik Rieger & Dietz GmbH u. Co. Tensioning device for tensioning lines, particularly chains or belts. 4,584,742, Cl. 24-68.0CD.

Spencer, Arthur T.: *See*—
Brown, George L.; de Sorgo, Miksa; and Spencer, Arthur T., 4,585,813, Cl. 523-409.000.

Speno Rail Services Co.: *See*—
Rivoire, Albert, 4,584,798, Cl. 51-178.000.

Sperry Corporation: *See*—
Lindblom, Curtis H.; and Martenas, Wayne B., 4,585,115, Cl. 198-624.000.
Merkey, John A.; Uhland, Francis L., Jr.; Campbell, Willis R.; and Bowden, Donald F., Jr., 4,584,827, Cl. 56-341.000.

Spinelli, Philippe: *See*—
Bruel, Michel; Soubie, Alain; and Spinelli, Philippe, 4,585,945, Cl. 250-492.200.

Spitzer, Donald P.: *See*—
Avotins, Peter V.; and Spitzer, Donald P., 4,585,550, Cl. 209-166.000.

Spreadbury, Alan C.: *See*—
Johnson, Derek; and Spreadbury, Alan C., 4,585,894, Cl. 564-164.000.

Sprecker, Mark A.: *See*—
van Loveren, Augustinus G.; and Sprecker, Mark A., 4,585,582, Cl. 252-522.00R.

Spruijtenburg, Robert: *See*—
Bernhard, Kurt; Muller, Robert K.; and Spruijtenburg, Robert, 4,585,885, Cl. 556-436.000.

SRI International: *See*—
Mosher, Carol W.; Tong, George L.; and Acton, Edward M., 4,585,859, Cl. 536-6.400.

Stahlecker, Fritz, to Stahlecker, Hans; and Stahlecker, Fritz. Fiber feed channel arrangement for open-end friction spinning. 4,584,832, Cl. 57-401.000.

Stahlecker, Hans: *See*—
Stahlecker, Fritz, 4,584,832, Cl. 57-401.000.

Staiman, David: *See*—
Inacker, Henry F.; Humphrey, Larry L.; and Staiman, David, 4,586,047, Cl. 343-372.000.

Stamberger, Paul, to Union Carbide Corporation. Epoxy-modified polyols and polymer-polyols useful in the preparation of improved plastics including polyurethane foams, elastomers and the like. 4,585,831, Cl. 525-31.000.

Stamm, Edward I.: *See*—
Koshoffer, John M.; Ekstedt, Edward E.; Samuel, Billy P.; and Stamm, Edward I., 4,584,834, Cl. 60-737.000.

Standard Oil Company, The: *See*—
Desmond, Michael J.; Pesa, Frederick A.; and Currie, Janie K., 4,585,640, Cl. 423-329.000.
Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., 4,585,617, Cl. 419-5.000.

Standard Oil Company (Indiana): *See*—
Fields, Ellis K.; Winzenburg, Mark L.; and De Marco, David A., 4,585,897, Cl. 568-409.000.
Venardos, Dean G.; and Grieves, Colin G., 4,585,063, Cl. 166-259.000.

Standler, Ronald B., to RIT Research Corp. Passive overvoltage protection devices, especially for protection of computer equipment connected to data lines. 4,586,104, Cl. 361-91.000.

Stanford, Joseph S. Beam for shoring structure. 4,584,809, Cl. 52-690.000.

Stapelbroek, Maryn G.; and Petroff, Michael D., to Rockwell International Corporation. Impurity band conduction semiconductor devices. 4,586,074, Cl. 357-58.000.

Stapelbroek, Maryn G.: *See*—
Petroff, Michael D.; Stapelbroek, Maryn G.; and Kleinhans, William A., 4,586,068, Cl. 357-30.000.

Starkstrom Gummersbach GmbH: *See*—
Wiederstein, Gerd-Walter, 4,586,124, Cl. 364-167.000.

Statt, William L.: *See*—
Stoffel, James G.; Statt, William L.; Kluger, Jacob N.; Mason, Lawrence J.; and Ermer, Richard G., 4,585,331, Cl. 355-8.000.

Stattlegger, Hans: *See*—
Saykowski, Franz; Wurminghausen, Thomas; Stattlegger, Hans; and Achtenberg, Theo, 4,585,849, Cl. 528-17.000.

Steck, George L.: *See*—
Gaston, Claire F.; Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,584,863, Cl. 72-477.000.

Sieck, Laurence D.: *See*—
Gaston, Claire F.; Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,584,863, Cl. 72-477.000.

Steck Manufacturing Company, Inc.: *See*—
Gaston, Claire F.; Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,584,863, Cl. 72-477.000.

Steck, Raymond E.: *See*—
Gaston, Claire F.; Steck, George L.; Steck, Raymond E.; and Steck, Laurence D., 4,584,863, Cl. 72-477.000.

Steckler, Thomas M., to Burroughs Corporation. Multilevel controller for a cache memory interface in a multiprocessing system. 4,586,133, Cl. 364-200.000.

Steelman, Sanford L.: *See*—
Morgan, Evan R.; and Steelman, Sanford L., 4,585,755, Cl. 514-11.000.

Stefanov, Stefan R.: *See*—
Atanasov, Nikolay A.; Lyutov, Lyudmil G.; Mircheva, Vera V.; and Stefanov, Stefan R., 4,585,531, Cl. 204-49.000.

Stegenga, Jerry A., to Racal Data Communications, Inc. Secure housing arrangement for electronic apparatus. 4,585,122, Cl. 206-334.000.

Steinberg, Richard G., to H & S Manufacturing Co., Inc. Manure spreader having shiftable cover. 4,585,266, Cl. 296-100.000.

Steiner, Gerd: *See*—
Rehder, Jurgen; Schuhmann, Siegfried; and Steiner, Gerd, 4,586,148, Cl. 364-550.000.

Steinhauer, Jurgen: *See*—
von Wichert, Nils; and Steinhauer, Jurgen, 4,585,503, Cl. 156-351.000.

Stemple, Donald K., to Motorola, Inc. Reactive sputter cleaning of semiconductor wafer. 4,585,517, Cl. 156-643.000.

Stephens, Carlton W. Tire mounted centering and leveling depressor for submersion tanks. 4,584,872, Cl. 73-45.600.

Stephens, William F., to Mattel, Inc. Collapsible toy automobile race course. 4,585,166, Cl. 238-10.00R.

Sterling Drug Inc.: *See*—
Bailey, Denis M., 4,585,764, Cl. 514-163.000.
Hadtke, Frederick B., 4,585,445, Cl. 604-234.000.

Sterling, John D., Jr.: *See*—
Bartlett, Philip L.; Daly, John J., Jr.; and Sterling, John D., Jr., 4,585,577, Cl. 252-305.000.

Stern, Richard M., to Riker Laboratories, Inc. Precursors of 6,7-dihydro-5,8-dimethyl-9-fluoro-1-oxo-1H,5H-benzo[ij]quinolizine-2-carboxylic acid. 4,585,868, Cl. 546-165.000.

Stevens, Don L.: *See*—
Roberson, Keith; Stevens, Don L.; and Filter, Harold E., 4,585,583, Cl. 252-628.000.

Stevens, Robert J.; and Bromley, Clinton E., to United States of America, Agriculture. Implement and transport wheel assembly therefor. 4,585,076, Cl. 172-240.000.

Stewart, David G.: *See*—
Morris, George E.; Nay, Barry; and Stewart, David G., 4,585,799, Cl. 518-717.000.

Stewart, LaMar H.: *See*—
Beck, Boyd R.; Stewart, LaMar H.; Tapp, Steven L.; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,585,522, Cl. 202-181.000.
Beck, Boyd R.; Stewart, LaMar H.; Tapp, Steven L.; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,585,522, Cl. 202-181.000.

Steyr-Daimler-Puch Aktiengesellschaft: *See*—
Schmidt, Harald; Morell, Josef; Herdin, Gunther; and Freudenschuss, Otto, 4,585,171, Cl. 239-88.000.

Stickel, Robert, to Honeywell GmbH. Method for simulation of a visual field of view. 4,585,418, Cl. 434-20.000.

Stiefel, Edward I.; Pan, Wie-Hin; and Halbert, Thomas R., to Exxon Research and Engineering Co. Sulfido(disulfido)bis(N,N-substituted dithiocarbamato)W(VI) complexes. 4,585,882, Cl. 556-38.000.

Stikvoort, Eduard F.: *See*—
Easer, Leonard J. M.; Wilting, Hermanus J. H.; and Stikvoort, Eduard F., 4,586,064, Cl. 357-23.400.

Stillions, Fredrick K. Self-cycling water control. 4,585,027, Cl. 137-624.110.

Stillman, Gerald T.; Pawlowski, Michael; and McDavid, Larry S., to Sensormedics Corporation. Temperature control system for cutaneous gas monitor. 4,586,149, Cl. 364-557.000.

Stith, Rosemarie. Life support stretcher bed. 4,584,989, Cl. 128-1.00D.

Stitt, Thomas D.: *See*—
Cooper, Charles E.; and Stitt, Thomas D., 4,585,982, Cl. 318-723.000.
Cooper, Charles E.; and Stitt, Thomas D., 4,585,983, Cl. 318-723.000.

Stoffel, James G.; Statt, William L.; Kluger, Jacob N.; Mason, Lawrence J.; and Ermer, Richard G., to Xerox Corporation. Optical scanning system utilizing linear drive motors. 4,585,331, Cl. 355-8.000.

Stolle Research & Development Corporation: *See*—
Beck, Lee R.; Flowers, Charles F., Jr.; Cowsar, Donald R.; and Tanquary, Albert C., 4,585,651, Cl. 424-88.000.

Stone & Webster Engineering Corp.: *See*—
Duncan, Dennis A.; and Woebeke, Herman, 4,585,543, Cl. 208-11.00R.
Gartside, Robert J.; Johnson, Axel R.; Ross, Joseph L.; Duncan, Dennis A.; and Bassler, Edwin J., 4,585,544, Cl. 208-73.000.

Storage Technology Partners II: *See*—
Wilkinson, Richard A., Jr.; and Hunt, William C., 4,585,963, Cl. 310-67.00R.

Stork Amsterdam B.V.: *See*—
Freerk, Abma, 4,584,932, Cl. 99-455.000.

Stracke, Werner: *See*—
Zlokarnik, Marko; Schindler, Georg; Koepke, Gunther; and Stracke, Werner, 4,585,561, Cl. 210-705.000.

Strain, Robert J., to Fairchild Semiconductor Corporation. Process for fabricating optical wave-guiding components and components made by the process. 4,585,299, Cl. 350-96.120.

Streusand, Marie J., to SWS Silicones Corporation. Thermally conductive room temperature vulcanizable compositions. 4,585,822, Cl. 524-443.000.

Strobel, Manfred: *See*—
Thiersch, Friedrich; Strobel, Manfred; and Dahlkamp, Heinz-Leo, 4,585,521, Cl. 202-141.000.

Strohbach, Hannelore, to Montefluos S.p.A. Purification of fluorinated lubricants free from hydrogen. 4,585,567, Cl. 252-58.000.

Stroupe, Stephen D.: *See*—
Wang, Chao-Huei J.; Stroupe, Stephen D.; and Jolley, Michael E., 4,585,862, Cl. 544-319.000.

Stubbe, Kenneth C.: *See*—
Stubbe, Richard J.; and Stubbe, Kenneth C., 4,584,918, Cl. 83-471.300.

Stubbe, Richard J.; and Stubbe, Kenneth C. Portable sawmill. 4,584,918, Cl. 83-471.300.

Stultz, Peter F.: *See*—
Liautaud, James P.; Westberg, John K., II; and Stultz, Peter F., 4,585,197, Cl. 248-349.000.

Stumpe, Werner: *See*—
Grauel, Ingolf; and Stumpe, Werner, 4,585,278, Cl. 303-7.000.

Stupp, Edward H.; and Fellows, Mark W., to North American Philips Corporation. Varible frequency current control device for discharge lamps. 4,585,974, Cl. 315-307.000.

Styskal, Pierre; Guicherd, Laurent; and Clar, Georges, to Framatome & Cie. Process for the replacement of guide pins of a guiding tube forming part of the top internal equipment of a pressurized water nuclear reactor, and corresponding apparatus. 4,585,613, Cl. 376-260.000.

Su, Tien-Kuei; and Youngjohn, Norman R., to Mobil Oil Corporation. Crystallizable polyolefin composition having increased crystallization temperature and rate of crystallization. 4,585,817, Cl. 524-108.000.

Sucech, Steven W., to Aluminum Company of America. Alpha alumina production in a steam-fluidized reactor. 4,585,645, Cl. 423-625.000.

Sud-Chemie Aktiengesellschaft: *See*—
Schneider, Michael; and Kochloefl, Karel, 4,585,632, Cl. 423-239.000.

Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission having torque converter with lock-up mechanism. 4,585,100, Cl. 192-3.310.

Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission having torque converter with lock-up mechanism. 4,585,102, Cl. 192-3.310.

Sugawara, Norio; and Nawa, Motoyuki, to Matsushita Electric Industrial Co., Ltd. Fluid deflecting assembly. 4,585,177, Cl. 239-590.000.

Sugie, Nobuyoshi: *See*—
Hasegawa, Tadashi; Izumo, Kazuyuki; Enomoto, Katsuyuki; and Sugie, Nobuyoshi, 4,585,686, Cl. 428-172.000.

Sugihara, Taisuke: *See*—
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, 4,585,869, Cl. 546-187.000.

Sugimori, Shigeru; Isoyama, Toyoshiro; Goto, Yasuyuki; and Ogawa, Tetsuya, to Chisso Corporation. 2-substituted-6-(5-substituted-2-pyrimidinyl)naphthalenes. 4,585,575, Cl. 252-299.610.

Sugimoto, Tadao; and Yamada, Sumito, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,585,729, Cl. 430-502.000.

Sugimura, Akihiko: *See*—
Kawamura, Takao; and Sugimura, Akihiko, 4,585,311, Cl. 350-347.00V.

Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, to House Food Industrial Co., Ltd. Decompression oil-frying method for food products. 4,585,660, Cl. 426-438.000.

Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, to House Food Industrial Co., Ltd. Process for preparing pressed tofu. 4,585,665, Cl. 426-634.000.

Suh, John T.: *See*—
Huang, Fu-chih; Suh, John T.; and Skiles, Jerry W., 4,585,758, Cl. 514-19.000.

Sukegawa, Tetsuya: *See*—
Toshimitsu, Kenshi; Sukegawa, Tetsuya; and Takano, Toshimasa, 4,585,321, Cl. 355-3.0CH.

Sulzer Brothers Limited: *See*—
Baumann, Heinz, 4,584,840, Cl. 62-6.000.
Knisely, Charles, 4,585,038, Cl. 139-435.000.

Sumitomo Chemical Co., Ltd.: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.
Harada, Haruhisa; Maki, Hiroshi; and Sasaki, Shigeru, 4,585,896, Cl. 564-403.000.
Saito, Teruo; Asai, Kuniaki; and Kobayashi, Tadayasu, 4,585,823, Cl. 524-456.000.
Sunbeam Corporation: *See*—
Berenson, Allen V., 4,585,922, Cl. 219-212.000.
Sunbeam Plastics Corporation: *See*—
Luker, Edward, 4,585,151, Cl. 222-153.000.
Sundstrand Corporation: *See*—
Beck, Richard, Jr.; and Louis, Joseph E., 4,584,926, Cl. 92-12.200.
Sunkist Growers, Inc.: *See*—
Paddock, Paul F.; and LaVars, Everett G., 4,585,126, Cl. 209-539.000.
Sunshine, Abraham; Laska, Eugene M.; and Siegel, Carole E., to Richardson-Vicks, Inc. Analgesic and anti-inflammatory compositions comprising diphenhydramine and methods of using same. 4,585,783, Cl. 514-408.000.
Sunwa Sharyo Manufacturing Co., Ltd.: *See*—
Misawa, Rintaro; and Takahashi, Kou, 4,585,241, Cl. 280-5.220.
Sutterlin, Wolfgang: *See*—
Defago, Raymond; and Sutterlin, Wolfgang, 4,585,820, Cl. 524-232.000.
Sutton, Leonard J., to ITT Corporation. Off-line switching mode power supply. 4,586,119, Cl. 363-17.000.
Suzuki, Hiroyuki; and Kobayashi, Shinichi, to Pioneer Electronic Corporation. Head cleaning cassette with automatic stop feature. 4,586,099, Cl. 360-128.000.
Suzuki, Minoru, to Ricoh Company, Ltd. Service life determining system for image bearing member of copying apparatus and the like. 4,585,327, Cl. 355-3.00R.
Suzuki, Ryushi; Yamaga, Joji; Matsui, Kunio; and Tsuchiya, Hiroaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for causing bubbles in a fluid to coalesce. 4,585,465, Cl. 55-52.000.
Suzuki, Yoshiharu: *See*—
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,586,040, Cl. 340-825.080.
Swaim, Raymond J.: *See*—
Slagle, Grady M., Jr.; and Swaim, Raymond J., 4,585,213, Cl. 254-386.000.
Sweet, Randall P., to Dow Corning Corporation. Polyorganosiloxane compositions useful for preparing unsupported extruded profiles. 4,585,830, Cl. 524-862.000.
Switek, Robert E., Jr.: *See*—
Beacham, Robert C.; Switek, Robert E., Jr.; and Buelow, Jack, 4,585,150, Cl. 222-129.000.
Switzer, Israel: *See*—
St. Arnaud, William J.; and Switzer, Israel, 4,586,081, Cl. 358-121.000.
Swords, Bernell E.: *See*—
Young, Galen F.; and Swords, Bernell E., 4,585,624, Cl. 422-305.000.
SWS Silicones Corporation: *See*—
Streusand, Marie J., 4,585,822, Cl. 524-443.000.
Sykes, Leslie. Needle for a sewing machine. 4,584,953, Cl. 112-222.000.
Symes, Richard G.: *See*—
Harding, Peter E.; and Symes, Richard G., 4,584,893, Cl. 74-422.000.
Syracuse University: *See*—
Schwarz, James A.; and Pasco, Robert W., 4,585,672, Cl. 427-88.000.
Syred, Nicholas; Biffin, Martin; and Claypole, Timothy C., to Coal Industry (Patents) Limited. Combustors. 4,584,948, Cl. 110-264.000.
Syred, Nicholas; Biffin, Martin; and Owen, Ieuan, to Coal Industry (Patents) Limited. Cyclone separators. 4,585,466, Cl. 55-349.000.
Syring, Ralph: *See*—
Meryman, Harold T.; Hornblower, Marne; and Syring, Ralph, 4,585,735, Cl. 435-2.000.
Szostak, Rosemarie, to Mobil Oil Corporation. Preparation of crystalline silicate ZSM-12. 4,585,639, Cl. 423-328.000.
Szubinski, Walther W.: *See*—
Auer, Heinz-Jochen; Klesse, Wolfgang; Quis, Peter; and Szubinski, Walther W., 4,585,809, Cl. 523-139.000.
Tabbert, Paul C., deceased; and Tabbert, Rae M., executrix. Safety latches for side rails and back rests of hospital stretchers. 4,584,728, Cl. 5-72.000.
Tabbert, Rae M., executrix: *See*—
Tabbert, Paul C., deceased; and Tabbert, Rae M., executrix, 4,584,728, Cl. 5-72.000.
Tachi, Ryosuke: *See*—
Sasaki, Kiyotaka; Tachi, Ryosuke; and Iwamoto, Katsunori, 4,584,978, Cl. 123-417.000.
Tacke, Peter, to Bayer Aktiengesellschaft. Process for the production of aromatic polyester carbonates in the absence of tertiary amines. 4,585,596, Cl. 260-463.000.
Taco Bell: *See*—
Brummett, Barry J., 4,585,661, Cl. 426-520.000.
Tadokoro, Hiroyuki, to Hitachi, Ltd. History information providing device for printers. 4,586,147, Cl. 364-550.000.
Taga, Kazumitsu: *See*—
Sugisawa, Ko; Matsumura, Yasushi; and Taga, Kazumitsu, 4,585,660, Cl. 426-438.000.
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,585,665, Cl. 426-634.000.
Taguchi, Hiroshi; Nishimura, Tsunehiko; and Kobayashi, Nobuo, to Dainippon Ink & Chemicals, Inc. Method of treating woody material and treated woody material. 4,585,703, Cl. 428-446.000.
Taguchi, Mitsuo. Silencer for firearms. 4,584,924, Cl. 89-14.400.
Taina, Timo: *See*—
Poutiainen, Kari; and Taina, Timo, 4,585,137, Cl. 220-21.000.
Tajima Junzo Seisakusho, Ltd.: *See*—
Tajima, Kazuo, 4,584,804, Cl. 52-235.000.
Tajima, Kazuo, to Tajima Junzo Seisakusho, Ltd. Mechanism for joining a mullion to a transom in a curtain wall. 4,584,804, Cl. 52-235.000.
Takada, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Body frame of a small-sized vehicle. 4,585,247, Cl. 280-281.00R.
Takada, Toshio: *See*—
Nagai, Norimichi; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, 4,585,568, Cl. 252-62.590.
Takagawa, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Numerical control working system. 4,586,125, Cl. 364-167.000.
Takahara, Yasuyuki; Kubo, Hirofumi; Hosaka, Shigeo; Izuna, Tomomi; and Fujimori, Toshiyuki, to Hitachi, Ltd. Transformer with a surface shield layer. 4,586,015, Cl. 336-84.00C.
Takahashi, Kazuo: *See*—
Ezaki, Atsuo; Enomoto, Morio; Kishita, Takehisa; and Takahashi, Kazuo, 4,585,733, Cl. 430-569.000.
Takahashi, Kou: *See*—
Misawa, Rintaro; and Takahashi, Kou, 4,585,241, Cl. 280-5.220.
Takahashi, Masanori: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.
Takahashi, Ryoichiro: *See*—
Tohmata, Eisuke; Takahashi, Ryoichiro; Sonoda, Sakae; Okamoto, Shoji; and Furuyama, Osamu, 4,585,564, Cl. 252-32.500.
Takahashi, Tadashi: *See*—
Hayashida, Hiroshi; Miyashita, Kunio; Takahashi, Tadashi; Morinaga, Shigeki; and Ishizaki, Kosho, 4,586,152, Cl. 364-718.000.
Takahashi, Takashi. Method of and apparatus for shaft power generation. 4,585,949, Cl. 290-1.00C.
Takahashi, Yuji: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.
Takaishi, Naotake: *See*—
Fujikura, Yoshiaki; Takaishi, Naotake; and Inamoto, Yoshiaki, 4,585,893, Cl. 562-499.000.
Takano, Toshimasa: *See*—
Toshimitsu, Kenshi; Sukegawa, Tetsuya; and Takano, Toshimasa, 4,585,321, Cl. 355-3.0CH.
Takashima, Junko: *See*—
Nitta, Issei; Nakao, Kenichiro; Miyake, Motoyoshi; Maruyama, Akira; and Takashima, Junko, 4,585,766, Cl. 514-180.000.
Takasugi, Hisashi: *See*—
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,585,860, Cl. 544-22.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, to Fujisawa Pharmaceutical Co., Ltd. 7-acylamino-3-vinylcephalosporanic acid derivatives useful for treatment of infectious diseases in human beings and animals. 4,585,860, Cl. 544-22.000.
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, to Tanabe Seiyaku Co., Ltd. 1,5-benzothiazepine derivatives and processes for preparing the same. 4,585,768, Cl. 514-211.000.
Takeda Riken Co., Ltd.: *See*—
Shimizu, Masao, 4,586,181, Cl. 371-27.000.
Takeda, Takashi: *See*—
Kidera, Kenji; Nakagawa, Shigeru; Takeda, Takashi; Omori, Katsumi; and Okuma, Toshiyuki, 4,585,681, Cl. 428-36.000.
Takeda, Yasushi: *See*—
Sakka, Kenji; Inui, Taiji; Okura, Ryoichi; Kanazawa, Masao; and Takeda, Yasushi, 4,584,837, Cl. 60-646.000.
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, to Hitachi, Ltd. Sintered aluminum nitride semi-conductor device. 4,585,706, Cl. 428-620.000.
Taketani, Noriaki: *See*—
Eguchi, Shuji; Taketani, Noriaki; Asano, Hideki; and Wajima, Motoyo, 4,585,841, Cl. 526-240.000.
Tam, Alexander. Envelope feeder. 4,585,223, Cl. 271-121.000.
Tamagawa Seigi Kabushiki Kaisha: *See*—
Katsuno, Yasunobu, 4,584,878, Cl. 73-497.000.
Tambara, Masakazu: *See*—
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.
Tamura, Hidemasa: *See*—
Uedaira, Satoru; Sameshima, Yoriko; and Tamura, Hidemasa, 4,585,718, Cl. 429-224.000.
Tamura, Hiroshi: *See*—
Konoike, Takehiro; and Tamura, Hiroshi, 4,585,744, Cl. 501-135.000.
Tamura, Shuichi; and Iizuka, Kiyoshi, to Canon Kabushiki Kaisha. Blur detecting device. 4,586,029, Cl. 340-540.000.

Tanabe Seiyaku Co., Ltd.: *See—*
Takeda, Mikio; Oh-ishi, Tokuro; Nakajima, Hiromichi; and Nagao, Taku, 4,585,768, Cl. 514-211.000.

Tanabe, Yoshiyuki; Kashiwaya, Mineo; Morita, Kiyomi; and Kameta, Katsunobu, to Hitachi, Ltd. Intake system for internal combustion engine. 4,584,981, Cl. 123-472.000.

Tanagho, Emil A.: *See—*
Lue, Tom P.; Tanagho, Emil A.; and Schmidt, Richard A., 4,585,005, Cl. 128-419.00R.

Tanaka, Kiichirou: *See—*
Okamura, Yasushi; Tanaka, Kiichirou; and Fujino, Hideo, 4,586,056, Cl. 346-76.0PH.

Tanaka, Kuniyoshi, to Kabushiki Kaisha Toshiba. Precision rotary moving mechanism using piezoelectric drive elements. 4,585,969, Cl. 310-328.000.

Tanaka, Osamu: *See—*
Komasaku, Seiichi; Iiyama, Hiroshi; Watanabe, Noboru; and Tanaka, Osamu, 4,584,778, Cl. 33-366.000.

Tanaka, Toyoki, to Sharp Kabushiki Kaisha. Automatic duplex electrophotographic copying machine. 4,585,336, Cl. 355-3.0SH.

Tanaka, Toyoki: *See—*
Yamamoto, Kazushi; and Tanaka, Toyoki, 4,585,330, Cl. 355-3.00R.

Tanaka, Yoshikazu: *See—*
Abo, Keiju; Kumura, Haruyoshi; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,584,909, Cl. 74-868.000.

Tanquary, Albert C.: *See—*
Beck, Lee R.; Flowers, Charles F., Jr.; Cowsar, Donald R.; and Tanquary, Albert C., 4,585,651, Cl. 424-88.000.

Tansil, Thomas B.: *See—*
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,585,906, Cl. 179-18.00B.

Taplin, Patricia A. Pet collar/leash. 4,584,967, Cl. 119-109.000.

Tapp, Steven L.: *See—*
Beck, Boyd R.; Stewart, LaMar H.; Tapp, Steven L.; Anderson, Don L., Jr.; and Nuffer, Daniel E., 4,585,522, Cl. 202-181.000.

Taradejna, Raymond M.: *See—*
Gronek, Fred J.; Taradejna, Raymond M.; and Watkins, Ray A., 4,585,351, Cl. 356-388.000.

Tarumi, Noriyoshi: *See—*
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; and Ito, Kunio, 4,585,319, Cl. 355-3.00R.
Okamoto, Yukio; Kimura, Kiyoshi; Miwa, Tadashi; Tarumi, Noriyoshi; Fukuchi, Masakazu; Ito, Kunio; and Fuma, Hiroshi, 4,585,326, Cl. 355-3.0DD.

Tateoka, Masamichi, to Canon Kabushiki Kaisha. Projection lens. 4,585,314, Cl. 350-464.000.

Tattam, Norman: *See—*
Northway, Herbert S.; and Tattam, Norman, 4,585,527, Cl. 204-1.00R.

Taucher, Robert: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,585,250, Cl. 280-618.000.

Taur, Yuan: *See—*
Lin, Burn J.; and Taur, Yuan, 4,585,342, Cl. 356-124.000.

Tawada, Yoshihisa: *See—*
Nakayama, Takehisa; Nishimura, Kunio; Tsuge, Kazunori; and Tawada, Yoshihisa, 4,585,537, Cl. 204-192.00D.

Tawara, Kinya: *See—*
Usui, Kazushi; and Tawara, Kinya, 4,585,748, Cl. 502-66.000.

Tayco Developments, Inc.: *See—*
Taylor, Paul H., 4,585,099, Cl. 188-322.190.

Taylor, James H. Molded rubber ski rope handle with continuous closed finger protector. 4,585,420, Cl. 441-69.000.

Taylor, Larry T.: *See—*
Rector, Robert E.; Taylor, Larry T.; Yarberry, Scott H.; and Grassi, Richard J., 4,586,157, Cl. 364-900.000.

Taylor, Paul H., to Tayco Developments, Inc. Molded plastic cylinder for energy absorbers, fluid cylinders, and the like. 4,585,099, Cl. 188-322.190.

Tchernev, Dimiter I. Solar refrigeration. 4,584,842, Cl. 62-106.000.

Tchervenkov, Christo: *See—*
Tchervenkov, Jean; and Tchervenkov, Christo, 4,585,440, Cl. 604-164.000.

Tchervenkov, Jean; and Tchervenkov, Christo. Intravenous catheter assembly. 4,585,440, Cl. 604-164.000.

TDK Corporation: *See—*
Okamura, Masatoshi; Shiba, Haruo; Hashizume, Kenji; and Sakata, Yoshiya, 4,585,187, Cl. 242-198.000.

Technic, Inc.: *See—*
Edson, Gwynne I., 4,585,539, Cl. 204-228.000.

Technicare Corporation: *See—*
Flugan, David C., 4,585,995, Cl. 324-322.000.
Jarkewicz, Gary G., 4,585,008, Cl. 128-654.000.

Technology Unlimited Inc.: *See—*
Jacob, Joseph; and Lau, John R., 4,585,792, Cl. 514-474.000.

Tegal Corporation: *See—*
Corn, Glenn R.; and Hegedus, Andreas G., 4,585,516, Cl. 156-643.000.
Hoog, Josef T.; and Mitzel, James W., 4,585,920, Cl. 219-121.0PR.

Teitelbaum, Steven L.: *See—*
Clevinger, Brian L.; Haddad, John G.; and Teitelbaum, Steven L., 4,585,741, Cl. 436-542.000.

Tekniska Rontgencentralen AB: *See—*
Andersson, Bjorn; Engding, Alf; Schaub, Peter; and Agoston, Andras, 4,585,610, Cl. 376-249.000.

Tektronix, Inc.: *See—*
Acuff, Mark, 4,586,022, Cl. 340-347.0AD.
Knierim, Daniel G., 4,586,025, Cl. 340-347.0DD.
Matney, Earl G., 4,585,989, Cl. 324-83.00D.
Rosener, Harvey J.; Knierim, David L.; and Dalrymple, John C., 4,586,037, Cl. 340-728.000.
Wimmer, Warren K., 4,585,975, Cl. 315-392.000.

Telescope Folding Furniture Co., Inc., The: *See—*
Vaillancourt, Vincent L., 4,585,435, Cl. 604-27.000.

TeleVideo Systems, Inc.: *See—*
Lin, Frank W., 4,585,997, Cl. 328-165.000.

Tengzelius, Jan; Kvist, Sten-Ake; and Jansson, Patricia, to Hoganas AB. Material for the powder metallurgical manufacture of soft magnetic components. 4,585,480, Cl. 75-255.000.

Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., to Standard Oil Company, The. Amorphous metal alloy compositions and synthesis of same by solid state incorporation/reduction reactions. 4,585,617, Cl. 419-5.000.

Tenner, Thomas E., Jr.: *See—*
Pang, Peter K. T.; and Tenner, Thomas E., Jr., 4,585,757, Cl. 514-18.000.

Teot, Arthur S.: *See—*
Lane, George A.; Rossow, Harold E.; and Teot, Arthur S., 4,585,572, Cl. 252-70.000.

Terada, Motoharu: *See—*
Akiba, Osamu; Suzuki, Yoshiharu; Terada, Motoharu; and Saeki, Takashi, 4,586,040, Cl. 340-825.080.

Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, to Fujisawa Pharmaceutical Co., Ltd. Phospholipid derivatives, processes for use thereof and pharmaceutical composition of the same. 4,585,762, Cl. 514-129.000.

Teraji, Tsutomu; Sakane, Kazuo; and Gotto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem intermediates. 4,585,872, Cl. 548-128.000.

Teranishi, Takeshi: *See—*
Ono, Yoshiaki; and Teranishi, Takeshi, 4,585,815, Cl. 524-23.000.

Teraoka, Masanori, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,585,944, Cl. 250-484.100.

Terry, Jimmy C.: *See—*
Hall, Charles T.; Woodard, Harry L.; Terry, Jimmy C.; Willis, Curtiss O.; and Hendrix, Phil W., 4,584,914, Cl. 81-176.150.

Testa, Victor, Sr; and Spector, George. Bicycle improvement. 4,585,244, Cl. 280-260.000.

Tetra Pak International AB: *See—*
Hakansson, Jan, 4,584,819, Cl. 53-410.000.
Lagerstedt, Jan E. R.; and Arnspang, Bengt-Arne, 4,585,498, Cl. 156-69.000.

Texaco Inc.: *See—*
Dominguez, Richard J. G., 4,585,850, Cl. 528-122.000.

Texas Instruments Incorporated: *See—*
Caudel, Edward R.; Magar, Surendar S.; and Leigh, Antony W., 4,586,131, Cl. 364-200.000.
Hashimoto, Masashi; and Reddy, Chitranjan, 4,585,954, Cl. 307-296.00R.
Reid, Lee R.; and Cody, Tommy D., 4,585,991, Cl. 324-158.00P.
Shah, Ashwin H., 4,586,166, Cl. 365-154.000.

Texas Romec, Inc.: *See—*
O'Connor, Rodney J., 4,585,018, Cl. 132-120.000.

Texas Tech University Health Sciences Center: *See—*
Pang, Peter K. T.; and Tenner, Thomas E., Jr., 4,585,757, Cl. 514-18.000.

Textilma AG: *See—*
Lueger, Claus, 4,584,853, Cl. 66-203.000.

Thatcher, Mark. Sport sandal construction. 4,584,782, Cl. 36-11.500.

Theodor Groz & Sohne: *See—*
Beck, Ernst; Durst, Alfred; Merk, Heinz; Bernhard, Schuler; Wiedenhofer, Kurt; and Wohlgemuth, Werner, 4,584,852, Cl. 66-120.000.

Thermal Dynamics Corporation: *See—*
Wilkins, Raymond G.; and Hatch, Bruce O., 4,585,921, Cl. 219-121.0PT.

Thesenfitz, Klaus, to Linhoff & Thesenfitz. Device for preparing roadway paving materials. 4,585,354, Cl. 366-25.000.

Theurer, Thomas: *See—*
Gille, Gunther; Goertler, Horst; Lill, Anton; Prohaska, Hans; Rachner, Horst; and Theurer, Thomas, 4,585,980, Cl. 318-444.000.

Thiersch, Friedrich; Strobel, Manfred; and Dahlkamp, Heinz-Leo, to Carl Still GmbH & Co. KG, Firma. Waste heat removal system for regenerative coke oven batteries having side burners. 4,585,521, Cl. 202-141.000.

Thomas, Gunter: *See—*
Junge, Bodo; Goldmann, Siegfried; Thomas, Gunter; and Garthoff, Bernward, 4,585,772, Cl. 514-229.000.

Thomas, Stephen M.: *See—*
Knickerbocker, Robert H.; and Thomas, Stephen M., 4,585,290, Cl. 339-97.00R.

Thomas, Virgil E.; and Jones, Charles R., to United States of America, Navy. Digital bus adaptor. 4,586,159, Cl. 364-900.000.

Thomason, Robert L.; and Tipton, Joseph C., to Advanced Computer Concepts, Inc. Graphics display systems. 4,586,036, Cl. 340-720.000.

Thompson, Harold L. Apparatus for predicting the exact time of currents in terms of the year, month, day and hour. 4,585,927, Cl. 235-70.00R.

Thomson Components-Mostek Corporation: *See—*
O'Toole, James E.; and Proebsting, Robert J., 4,586,170, Cl. 365-200.000.

Thomson-CSF: *See—*
Cornet, Jean; Lehureau, Jean-Claude; and Magna, Henriette, 4,586,165, Cl. 365-126.000.
Mourier, Georges, 4,585,965, Cl. 315-39.300.
Vernet, Jean L.; Bayle, Philippe; Bienvenu, Georges G.; and Vernay, Gerard, 4,586,172, Cl. 367-97.000.
Thomson, Malcolm G., to Motorola Information Systems Limited. Means and method for data transmission on wired channels. 4,586,023, Cl. 340-347.0DD.
Thormocatalytic Corporation: *See—*
Farina, Alfred J., 4,584,968, Cl. 122-14.000.
Thorn EMI Limited: *See—*
Hing, Peter, 4,585,972, Cl. 313-636.000.
Tiberg, Jan, to SKF Steel Engineering AB. Method of using rods resistant to hydrosulfuric acid. 4,585,062, Cl. 166-244.100.
Tice, Thomas R.; Meyers, William E.; Gilley, Richard M.; and Shannon, William M., to Southern Research Institute. Long-acting biocidal compositions and method therefor. 4,585,482, Cl. 106-15.050.
Tietge, Fred R.; and Sargent, Ronald J., to Saresearch Corporation. Spa or pool cleaning device. 4,584,733, Cl. 15-1.700.
Tillotson, Henry B., to Toro Company, The. Line metering apparatus. 4,584,771, Cl. 30-276.000.
Tindall, Donald J.; and Means, Anthony R., to Upjohn Company, The. 17β-hydroxy-17α-methyl-5α-androstano[3,2-c]pyrazole 17-methyl ether. 4,585,765, Cl. 514-172.000.
Tipton, Joseph C.: *See—*
Thomason, Robert L.; and Tipton, Joseph C., 4,586,036, Cl. 340-720.000.
Tirheimer, Raymond J. Single and dual wheel configuration for vehicles. 4,585,276, Cl. 301-36.00R.
Tivolle, Alain; Roumegoux, Bernard; Delhaye, Gerard; Codur, Yves; and Mittaine, Bernard, to Societe Lorraine et Meridionale de Laminage Continu - SOLMER. Device for detecting cracks in steel slabs leaving continuous casting. 4,584,746, Cl. 29-81.00B.
Tiwari, Sandip, to International Business Machines Corporation. Heterostructure bipolar transistor. 4,586,071, Cl. 357-34.000.
TMC Corporation: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,585,250, Cl. 280-618.000.
Toda Kogyo Corp.: *See—*
Nagai, Norimichi; Horiishi, Nanao; Kiyama, Masao; and Takada, Toshio, 4,585,568, Cl. 252-62.590.
Todo, Eishiro: *See—*
Teraji, Tsutomu; Todo, Eishiro; Shimazaki, Norihiko; Oku, Teruo; and Namiki, Takayuki, 4,585,762, Cl. 514-129.000.
Tohmata, Eisuke; Takahashi, Ryoichiro; Sonoda, Sakae; Okamoto, Shoji; and Furuyama, Osamu, to Nippon Kokan Kabushiki Kaisha. Cold rolling oil for steel sheet. 4,585,564, Cl. 252-32.500.
Toida, Shouji: *See—*
Miyaji, Kenichi; Toida, Shouji; Ito, Seiichi; and Watanabe, Isao, 4,585,134, Cl. 215-100.00A.
Tokico Ltd.: *See—*
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.
Tokita, Kenneth M.; and Haller, Belmont L. Medical device for applying therapeutic radiation. 4,584,991, Cl. 128-1.100.
Tokuzawa, Taro: *See—*
Saegusa, Takeo; Sano, Yoshiyuki; Kimura, Yoshiharu; Shinonome, Osami; and Tokuzawa, Taro, 4,585,835, Cl. 525-430.000.
Tokyo Gas Company Ltd.: *See—*
Kusama, Akio; Nakamachi, Ichiro; Shigihara, Kunio; Amemori, Hiroyuki; Miyata, Yasuji; and Iwamoto, Tetsuo, 4,585,161, Cl. 236-15.0BD.
Morinaga, Akio; Hayashi, Mitsutoshi; and Koga, Motoyuki, 4,584,963, Cl. 118-663.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Amano, Shin-ya; and Hirakawa, Hideki, 4,586,160, Cl. 364-900.000.
Ando, Hideo, 4,585,933, Cl. 250-201.000.
Ando, Hideo, 4,586,173, Cl. 369-275.000.
Fukumoto, Akira, 4,586,144, Cl. 364-510.000.
Kamohara, Hisato; Aisaka, Tatsuyoshi; and Kawai, Mituo, 4,585,620, Cl. 420-442.000.
Matsumoto, Kenzo, 4,586,135, Cl. 364-414.000.
Nakamine, Chosin, 4,586,034, Cl. 340-679.000.
Uchida, Yukimasa, 4,585,955, Cl. 307-297.000.
Watanabe, Yoshihiro, 4,585,928, Cl. 235-379.000.
Tolsky, Jury K.: *See—*
Baidenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.
Tomihashi, Nobuyuki: *See—*
Ohmori, Akira; Tomihashi, Nobuyuki; and Ihara, Kiyohiko, 4,585,306, Cl. 350-96.340.
Tominaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Co., Ltd. Aniline derivatives and cardiotonic composition. 4,585,774, Cl. 514-255.000.
Toner, Thomas J.: *See—*
Hibyan, Edward S.; Toner, Thomas J.; and Ogle, Peter C., 4,585,393, Cl. 416-134.00A.
Tong, George L.: *See—*
Mosher, Carol W.; Tong, George L.; and Acton, Edward M., 4,585,859, Cl. 536-6.400.
Topholm, Christian, to Topholm & Westerman I/S. Coupling element for a hearing aid. 4,585,089, Cl. 181-135.000.
Topholm & Westerman I/S: *See—*
Topholm, Christian, 4,585,089, Cl. 181-135.000.
Toro Company, The: *See—*
Tillotson, Henry B., 4,584,771, Cl. 30-276.000.
Tosaki, Chikao, to Japan Synthetic Rubber Co., Ltd. Dynamic viscoelasticity measuring apparatus of torsional vibration type. 4,584,882, Cl. 73-847.000.
Toshiba Shibaura Denki Kabushiki Kaisha: *See—*
Koike, Hideharu, 4,586,163, Cl. 365-104.000.
Toshimitsu, Kenshi; Sukegawa, Tetsuya; and Takano, Toshimasa, to Kabushiki Kaisha Toshiba. Corona discharging apparatus. 4,585,321, Cl. 355-3.0CH.
Tosti, Giorgio, to Mecondor S.p.A. Method of making high capacitive multilayer conductive bars. 4,584,768, Cl. 29-872.000.
Townsend Engineering Company: *See—*
Townsend, Ray T., 4,584,740, Cl. 17-1.00F.
Townsend, Ray T., to Townsend Engineering Company. Link separator. 4,584,740, Cl. 17-1.00F.
Toyo Kenki Zeizo Kabushiki Kaisha: *See—*
Arai, Hiroyuki, 4,585,910, Cl. 191-90.000.
Toyo Kohan Co., Ltd: *See—*
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,585,529, Cl. 204-27.000.
Toyoda Gosei Co., Ltd.: *See—*
Ogisu, Yasuhiko, 4,584,965, Cl. 118-730.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Akabane, Hitoshi, 4,584,795, Cl. 51-165.710.
Yoneda, Takao; and Sakakibara, Yasuji, 4,584,796, Cl. 51-165.710.
Toyota Jidosha K.K.: *See—*
Kuwayama, Yoshinari; Miura, Masakatsu; and Morisawa, Kunio, 4,585,103, Cl. 192-4.00A.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kawabata, Yasuhiro; Ito, Shoji; Shibata, Noriyoshi; Sasano, Mitsunori; and Ohmura, Fusaji, 4,585,028, Cl. 137-625.480.
Kawai, Hiroshi; and Ootsuka, Yukio, 4,585,047, Cl. 164-126.000.
Niwa, Takao; Gono, Takeshi; and Osanai, Akinori, 4,584,907, Cl. 74-866.000.
Okada, Hachiro; and Ono, Kenzi, 4,584,793, Cl. 49-488.000.
Uchida, Goro, 4,584,846, Cl. 62-244.000.
Watanabe, Masao; Nagakura, Hideo; and Yanagisawa, Taminori, 4,585,389, Cl. 414-752.000.
Yoshitsugu, Noritada; Hashimoto, Masakazu; and Matsuzaki, Yutaka, 4,585,251, Cl. 280-804.000.
Traenckner, Hans-Joachim: *See—*
Meixner, Jurgen; Traenckner, Hans-Joachim; Kremer, Wolfgang; and Muller, Manfred, 4,585,828, Cl. 524-604.000.
Trahan, Albert J.; and Vajda, Vladimir, to Emhart Industries, Inc. Plunger suitable for use in a glassware forming machine. 4,585,467, Cl. 65-172.000.
Travis, Claiborne L., to Crown Zellerbach Corporation. Collapsible container and frame. 4,585,159, Cl. 229-41.00R.
Trego, Brian R.: *See—*
Progneaux, Eric R.; and Trego, Brian R., 4,585,821, Cl. 524-425.000.
Treiber, Helmut: *See—*
Nitsch, Wilhelm; Kieslich, Walter; and Treiber, Helmut, 4,585,338, Cl. 355-56.000.
Treves, Gino R.; and Baum, Burton M., to FMC Corporation. Azabicyclic methanols. 4,585,865, Cl. 546-112.000.
Triuzzi, Agostino: *See—*
Bocci, Giorgio; Brizielli, Sando; Triuzzi, Agostino; and Deplano, Stefano, 4,585,411, Cl. 432-11.000.
Troponwerke GmbH & Co. KG: *See—*
Boltze, Karl-Heinz, 4,585,880, Cl. 548-501.000.
Trujillo, Josephine M. Manicurists hand holder. 4,585,017, Cl. 132-73.000.
Tsai, Mei-Yuan, to Aluminum Company of America. Metalworking lubricant comprising mineral oil and alkoxyalkyl ester. 4,585,565, Cl. 252-49.500.
Tsuchie, Takanori: *See—*
Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,585,890, Cl. 560-179.000.
Tsuchikawa, Haruo: *See—*
Yasuda, Hiroshi; and Tsuchikawa, Haruo, 4,585,943, Cl. 250-396.00R.
Yasuda, Hiroshi; Tsuchikawa, Haruo; Kai, Junichi; and Kobayashi, Koichi, 4,586,141, Cl. 364-490.000.
Tsuchiya, Hiroaki: *See—*
Suzuki, Ryushi; Yamaga, Joji; Matsui, Kunio; and Tsuchiya, Hiroaki, 4,585,465, Cl. 55-52.000.
Tsuchiya, Hiroyoshi: *See—*
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.
Tsuge, Kazunori: *See—*
Nakayama, Takehisa; Nishimura, Kunio; Tsuge, Kazunori; and Tawada, Yoshihisa, 4,585,537, Cl. 204-192.00D.
Tsuji, Fumio, to Shimadzu Corporation. Blood cell discriminator and counter utilizing transmitted and scattered light. 4,586,190, Cl. 377-10.000.
Tsuji, Kazuyuki: *See—*
Konotsune, Shiro; Higashi, Hiromi; Wada, Masami; Maehara, Hiroshi; and Tsuji, Kazuyuki, 4,585,834, Cl. 525-342.000.
Tsuji, Yoshihiro; Fujihara, Fumio; and Nishikawa, Yoichi, to Kurimoto Ltd. Portable crusher. 4,585,179, Cl. 241-101.700.

Tsukiyama, Tokuhiro; Kondo, Yoshie; Kakuse, Katsuharu; Saba, Shinpei; Ozaki, Syoji; and Itoh, Kunihiro, to Hitachi, Ltd. Method and system for data compression and restoration. 4,586,027, Cl. 340-347.0DD.

Tsuno, Katsushige, to Jeol Ltd. Transmission electron microscope. 4,585,942, Cl. 250-396.0ML.

Tsuru, Kazuo: *See*—
Hiraki, Shun-ichi; Tsuru, Kazuo; Usuki, Yoshikazu; and Koshino, Yutaka, 4,585,489, Cl. 148-1.500.

Tsuruoka, Michihiko: *See*—
Miyoshi, Noriomi; Tsuruoka, Michihiko; and Nagumo, Mutsumi, 4,584,883, Cl. 73-861.240.

Tsuyama Mfg. Co., Ltd.: *See*—
Tsuyama, Sadaharu, 4,586,113, Cl. 362-72.000.

Tsuyama, Sadaharu, to Tsuyama Mfg. Co., Ltd. Lamp for bicycle. 4,586,113, Cl. 362-72.000.

Tucker, Charles L.; and Tucker, Donna T. Folding table system. 4,584,946, Cl. 108-50.000.

Tucker, Donna T.: *See*—
Tucker, Charles L.; and Tucker, Donna T., 4,584,946, Cl. 108-50.000.

Tung, Lu H.: *See*—
Vitkuske, John F.; and Tung, Lu H., 4,585,816, Cl. 524-68.000.

Tung, William C. T.; and Deisz, George A., to Goodyear Tire & Rubber Company, The. Polyester composition. 4,585,854, Cl. 528-295.000.

Tunooka, Tutomu; and Mizuno, Fumio, to NGK Spark Plug Co. Dielectric ceramic composition for high frequency purposes. 4,585,745, Cl. 501-135.000.

Tunstill, James W.: *See*—
Bamberger, Charles; and Tunstill, James W., 4,584,994, Cl. 128-79.000.

Tupper, Alan W., to Latchways Limited. Load-transfer device and system. 4,584,945, Cl. 104-182.000.

Turk, Herbert: *See*—
Schippers, Heinz; Lenk, Erich; Schiminski, Herbert; and Turk, Herbert, 4,585,181, Cl. 242-43.00A.

Turner, Garland L.: *See*—
Haylock, John C.; Saunders, Peter R.; Turner, Garland L.; and Twilley, Ian C., 4,585,464, Cl. 51-298.000.

Turner, Robert B.: *See*—
Lancaster, Gerald M.; Turner, Robert B.; and Booth, Llewellyn D., 4,585,804, Cl. 521-128.000.

Turnquist, Sanfred E. Apparatus for concentrating, separating and removing floating solid material. 4,585,557, Cl. 210-320.000.

Twilley, Ian C.: *See*—
Haylock, John C.; Saunders, Peter R.; Turner, Garland L.; and Twilley, Ian C., 4,585,464, Cl. 51-298.000.

Tyrrell, Raymond E., to ITT Corporation. Asynchronous to synchronous data interface. 4,586,189, Cl. 375-117.000.

Ube Chemical Industries Co., Inc.: *See*—
Yamamoto, Kosei; and Kaneyasu, Akira, 4,585,743, Cl. 501-108.000.

UBE Industries, Ltd.: *See*—
Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,585,890, Cl. 560-179.000.

Uchida, Goro, to Toyota Jidosha Kabushiki Kaisha. Air conditioner assembly for use in a vehicle. 4,584,846, Cl. 62-244.000.

Uchida, Hideo: *See*—
Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; Otsuka, Hiroyoshi; and Uchida, Hideo, 4,586,089, Cl. 358-280.000.

Uchida, Itsuo: *See*—
Okamoto, Masanori; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,585,789, Cl. 514-461.000.

Uchida, Kanzaburo, to Daiichi Denshi Kogyo Kabushiki Kaisha. Flexible connector. 4,585,366, Cl. 403-21.000.

Uchida, Minoru; and Ikuma, Sadao, to Mitsubishi Monsanto Chemical Company. Glass fiber-reinforced heat resistant resin composition. 4,585,824, Cl. 524-494.000.

Uchida, Yukimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. Internally regulated power voltage circuit for MIS semiconductor integrated circuit. 4,585,955, Cl. 307-297.000.

Uchigaki, Takatoshi; Hyodo, Hiroshi; and Iwase, Teijiro, to Kabushiki Kaisha Kyoto Daiichi Kagaku. Method for continuously measuring a specified ingredient in a diluted liquid. 4,585,007, Cl. 128-632.000.

Uda, Taizo: *See*—
Miyazaki, Haruhiko; Uda, Taizo; Hirai, Koichi; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,585,890, Cl. 560-179.000.

Ueda, Hiroyuki, to Canon Kabushiki Kaisha. Electronic equipment having a character sequence memory and a character display. 4,585,360, Cl. 400-63.000.

Ueda, Takeo, to NSK-Warner K.K. Retractor. 4,585,185, Cl. 242-107.000.

Uedaira, Satoru; Sameshima, Yoriko; and Tamura, Hidemasa, to Sony Corporation. Lithium-manganese dioxide cell. 4,585,718, Cl. 429-224.000.

Uehara, Zenshiro. Electromagnetic control device for tape recorder. 4,586,103, Cl. 360-137.000.

Uhl, Robert J.: *See*—
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,585,562, Cl. 210-805.000.

Uhland, Francis L., Jr.: *See*—
Merkey, John A.; Uhland, Francis L., Jr.; Campbell, Willis R.; and Bowden, Donald F., Jr., 4,584,827, Cl. 56-341.000.

Uhrmacher, Ralph R.: *See*—
Newberry, Thomas E., Jr.; Uhrmacher, Ralph R.; and Arblaster, Robert K., 4,585,650, Cl. 424-73.000.

Umeda, Haruhiko; Fujita, Nobuo; Bando, Keiji; Onohara, Kazuyuki; and Fujiwara, Yasuo, to Kabushiki Kaisha Komatsu Seisakusho. Sprocket assembly for a track type vehicle. 4,585,431, Cl. 474-94.000.

Umehara, Kazuyoshi: *See*—
Okamoto, Masanori; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,585,789, Cl. 514-461.000.

Umemoto, Tadahiro: *See*—
Yoshida, Kazuo; and Umemoto, Tadahiro, 4,585,917, Cl. 219-76.100.

Union Camp Corporation: *See*—
Johnson, Robert W., Jr.; and Logan, Roger, 4,585,584, Cl. 260-104.000.

Union Carbide Corporation: *See*—
Akridge, James R., 4,585,714, Cl. 429-193.000.
Barker, Thomas H., Jr., 4,585,643, Cl. 423-342.000.
Briggs, John R., 4,585,883, Cl. 556-42.000.
Domeier, Linda A., 4,585,833, Cl. 525-260.000.
Domeier, Linda A., 4,585,847, Cl. 526-271.000.
Grimm, Richard C., 4,585,525, Cl. 203-62.000.
Gross, Laurence H.; and Noshay, Allen, 4,585,840, Cl. 526-159.000.
Kuo, An-Li; Goddard, Errol D.; and Ritscher, James S., 4,585,829, Cl. 524-714.000.
Marple, Jack W., 4,585,715, Cl. 429-194.000.
Nausedas, Joseph A., 4,585,680, Cl. 428-36.000.
Osborn, Claiborn L.; and Koleske, Joseph V., 4,585,702, Cl. 428-425.900.
Stamberger, Paul, 4,585,831, Cl. 525-31.000.

Uniroyal Chemical Company, Inc.: *See*—
Hunter, Byron A.; Rowland, Donald G.; and Peascoe, Warren J., 4,585,802, Cl. 521-92.000.

Unisearch Limited: *See*—
Woo, Jae L.; and Farah, Boshra D., 4,584,875, Cl. 73-160.000.

United States Gypsum Company: *See*—
Balinski, Henry A., 4,584,811, Cl. 52-714.000.
Wendt, Alan C., 4,584,808, Cl. 52-483.000.

United States of America
Agriculture: *See*—
Stevens, Robert J.; and Bromley, Clinton E., 4,585,076, Cl. 172-240.000.
Air Force: *See*—
Downie, John W., 4,586,045, Cl. 343-18.00E.
Downie, John W., 4,586,048, Cl. 343-379.000.
Pringle, Robert D.; and O'Berry, William A., 4,586,046, Cl. 343-18.00E.
Schneider, Richard T., 4,585,937, Cl. 250-227.000.
Schneider, Richard T.; and Long, James F., 4,585,948, Cl. 250-578.000.
Wolf, Mary L., 4,586,043, Cl. 343-5.0CF.
Army: *See*—
DeWilde, Mark A.; and Decker, Leon J., 4,586,185, Cl. 372-34.000.
Energy: *See*—
Dolbeare, Frank A.; and Gray, Joe W., 4,585,736, Cl. 435-6.000.
Dyer, George R., 4,585,986, Cl. 323-271.000.
Hellstrom, Eric E., 4,585,635, Cl. 423-263.000.
Hilbert, Claude; Martinis, John M.; and Clarke, John, 4,585,999, Cl. 330-61.00R.
Kaufman, Jay S.; and Kissinger, John A., 4,585,053, Cl. 165-74.000.
Mihalka, Alex M., 4,586,118, Cl. 363-17.000.
Mullenhoff, Donald J.; and Wilson, Stephen W., 4,586,138, Cl. 364-424.000.
Skotheim, Terje, 4,585,581, Cl. 252-518.000.
National Aeronautics and Space Administration: *See*—
Blount, Dale H., 4,585,191, Cl. 244-169.000.
Millen, Ernest W., 4,586,140, Cl. 364-433.000.
Webster, Christopher R., 4,585,344, Cl. 356-311.000.
National Aeronautics & Space Administration: *See*—
Galen, Theodore J., 4,584,887, Cl. 73-863.310.
Navy: *See*—
Capelle, Ernest A., Jr., 4,585,121, Cl. 206-331.000.
Thomas, Virgil E.; and Jones, Charles R., 4,586,159, Cl. 364-900.000.

U.S. Philips Corporation: *See*—
Esthill, Stephen P., 4,585,926, Cl. 219-506.000.
Esser, Leonard J. M.; Wilting, Hermanus J. H.; and Stikvoort, Eduard F., 4,586,064, Cl. 357-23.400.
Gilliam, John E., 4,586,121, Cl. 363-87.000.
Martens, Jan W. D.; and Peeters, Winfried L., 4,586,092, Cl. 360-59.000.
Neukomm, Hans R., 4,586,065, Cl. 357-23.500.
Otten, Henricus J. M.; Van Dongen, Frederik; and Geboers, Josephus J. A., 4,585,909, Cl. 179-84.0VF.

United Technologies Corporation: *See*—
Colling, Arthur K., Jr., 4,584,960, Cl. 114-333.000.
Gupta, Dinesh K.; and Duvall, David S., 4,585,481, Cl. 106-14.050.
Hasselmark, Earl D.; Waters, James P.; and Wisner, George R., 4,585,978, Cl. 318-118.000.
Hibyan, Edward S.; Toner, Thomas J.; and Ogle, Peter C., 4,585,393, Cl. 416-134.00A.

Rosenbush, David M.; and Couch, Robert P., 4,586,139, Cl. 364-431.020.
Unitika Ltd.: *See—*
Saegusa, Takeo; Sano, Yoshiyuki; Kimura, Yoshiharu; Shinonome, Osami; and Tokuzawa, Taro, 4,585,835, Cl. 525-430.000.
Universal Enterprises Inc.: *See—*
Ridenour, Ralph G., 4,585,255, Cl. 285-93.000.
Universal Instruments Corporation: *See—*
Ackerman, Daniel W., 4,585,295, Cl. 339-258.00R.
University of California, Regents of: *See—*
Lue, Tom P.; Tanagho, Emil A.; and Schmidt, Richard A., 4,585,005, Cl. 128-419.00R.
University of Connecticut Research & Development Corporation: *See—*
Waite, J. Herbert, 4,585,585, Cl. 260-112.50R.
University of Minnesota, Regents of the: *See—*
Miller, Larry L.; Blankespoor, Ronald L.; and Zinger, Baruch, 4,585,652, Cl. 424-83.000.
University of Queensland: *See—*
Leung, Leung S.; and Chong, Yat O., 4,585,051, Cl. 165-1.000.
University of South Alabama, a Public Body Corporate: *See—*
Sikes, C. Steven; and Wheeler, A. P., 4,585,560, Cl. 210-698.000.
Unland, Herman: *See—*
Richard, Herman; Unland, Herman; and Ostmann, Klaus, 4,585,384, Cl. 414-139.000.
Unnerholm, Leif: *See—*
Jarmyr, Ragnar; and Unnerholm, Leif, 4,584,929, Cl. 98-115.100.
Uozu, Nobuo; Yokoyama, Hiroyoshi; and Matsuda, Yoichi, to Hitachi Condenser Co., Ltd. Process for producing printed circuit board. 4,585,502, Cl. 156-278.000.
Upjohn Company, The: *See—*
Sih, John C., 4,585,886, Cl. 556-441.000.
Tindall, Donald J.; and Means, Anthony R., 4,585,765, Cl. 514-172.000.
VanRheenen, Verlan H., 4,585,590, Cl. 260-239.55C.
Ura, Mitsuru: *See—*
Takeda, Yukio; Ogihara, Satoru; Ura, Mitsuru; Nakamura, Kousuke; Asai, Tadamichi; Ohkoshi, Tokio; Matsushita, Yasuo; and Maeda, Kunihiro, 4,585,706, Cl. 428-620.000.
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Floreancig, Antoine, 4,585,626, Cl. 423-2.000.
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Urbani, William G. Dirty water heat exchanger. 4,584,969, Cl. 122-136.00R.
Usher, Paul: *See—*
Williams, Thomas D.; and Usher, Paul, 4,585,218, Cl. 271-10.000.
Ushiyama, Hiroshi: *See—*
Nishimura, Akira; Kawasaki, Kazuaki; Nakano, Yasuo; Horie, Hiromichi; Ushiyama, Hiroshi; Manabe, Mikio; Maeyama, Hikaru; Abe, Saburo; Tambara, Masakazu; Takahashi, Yuji; and Katagiri, Yasuo, 4,585,691, Cl. 428-311.100.
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Bryce, William D., Jr., 4,585,382, Cl. 411-34.000.
Usui, Kazushi; and Tawara, Kinya, to Research Association for Residual Oil Processing. Crystalline catalyst compositions for the conversion of hydrocarbons. 4,585,748, Cl. 502-66.000.
Usui, Setsuo: *See—*
Hayafuji, Yoshinori; Sawada, Akashi; Usui, Setsuo; and Shibata, Akikazu, 4,585,512, Cl. 156-617.00R.
Usuki, Yoshikazu: *See—*
Hiraki, Shun-ichi; Tsuru, Kazuo; Usuki, Yoshikazu; and Koshino, Yutaka, 4,585,489, Cl. 148-1.500.
USV Pharmaceutical Corp.: *See—*
Huang, Fu-chih; Suh, John T.; and Skiles, Jerry W., 4,585,758, Cl. 514-19.000.
Utah State Universtiy Foundation: *See—*
Bialkowski, Stephen E., 4,585,301, Cl. 350-96.200.
Uzuka, Mitsuo: *See—*
Sakamoto, Satoshi; and Uzuka, Mitsuo, 4,585,979, Cl. 318-254.000.
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Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.
Vaidyanathan, Hariharan, to Communications Satellite Corporation. Hydrogen electrode for a fuel cell. 4,585,711, Cl. 429-42.000.
Vaillancourt, Vincent L., to Telescope Folding Furniture Co., Inc., The. Extension set for drug delivery. 4,585,435, Cl. 604-27.000.
Vajda, Vladimir: *See—*
Trahan, Albert J.; and Vajda, Vladimir, 4,585,467, Cl. 65-172.000.
Valcor Scientific, Ltd.: *See—*
Meisner, Lorraine F.; and Schinitsky, Michael R., 4,585,754, Cl. 514-8.000.
Valdez, Frank A., to Saber Technology Corp. Logic and amplifier cells. 4,586,004, Cl. 330-300.000.
Valdiva, Juan: *See—*
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Valint, Paul L.: *See—*
Bock, Jan; Kowalik, Ralph M.; and Valint, Paul L., 4,585,810, Cl. 523-175.000.
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Van Den Berg, Willem: *See—*
Bleijerveld, Hendrik C.; and Van Den Berg, Willem, 4,586,042, Cl. 343-5.0VQ.
Van den Keybus, Frans A. M.: *See—*
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VanderLaan, Willard P., to Whittier Institute for Diabetes and Endocrinology, The. Prolactin immunoassay using synthetic peptide. 4,585,740, Cl. 436-537.000.
van der Lely, Cornelis. Agricultural tractor. 4,585,084, Cl. 180-53.100.
Van Dongen, Frederik: *See—*
Otten, Henricus J. M.; Van Dongen, Frederik; and Geboers, Josephus J. A., 4,585,909, Cl. 179-84.0VF.
Van Egmond, Cor F.: *See—*
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Vanetik, Anatoly: *See—*
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van Lingen, H. Peter, to Asahi/America, Inc. Motor operated tandem valve assembly. 4,585,032, Cl. 137-862.000.
van Loveren, Augustinus G.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Perfumery uses of 2-n-pentyl-2-cyclohexen-1-one. 4,585,582, Cl. 252-522.00R.
Vanmeurs, Peter: *See—*
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VanRheenen, Verlan H., to Upjohn Company, The. Cyanohydrin process. 4,585,590, Cl. 260-239.55C.
Van Savage, Cynthia A.: *See—*
Fischer, Robert G., Jr.; and Van Savage, Cynthia A., 4,585,628, Cl. 423-22.000.
Variable Speech Control Company ("VSC"), The: *See—*
Wong, Stephen, 4,586,174, Cl. 370-69.100.
Varian Associates, Inc.: *See—*
James, Bertram G., 4,586,009, Cl. 333-156.000.
Vassiliades, Anthony E. Microencapsulation process multi-walled microcapsules, transfer sheet record material and its production. 4,586,060, Cl. 346-215.000.
Vaughan, Jerry L.: *See—*
Pierce, Dale E.; Vaughan, Jerry L.; and Nowlin, Oscar D., 4,585,749, Cl. 502-107.000.
Vavra, Norbert; and Seidensticker, Jens, to Rheinmetall GmbH. Missile head to be released in an airplane cargo drop or from a flying body. 4,584,943, Cl. 102-214.000.
VEB Werk fur Fernsehelektronik im VEB Kombinat Mikroelektronik: *See—*
Demus, Dietrich; Zaschke, Horst; Richter, Sabine; Deutscher, Hans-Joachim; and Wiegeleben, Adelbert, 4,585,576, Cl. 252-299.620.
Veda, Inc.: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Henke, Donald L., 4,585,385, Cl. 414-311.000.
Veesojuzny Ordena Trudovogo Krasnogo Znameni Naucho-Issle: *See—*
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.
Veillard, Jacques, to Etablissement Public de Telediffusion dit. Method and device for coherent demodulation of a digitally modulated carrier. 4,585,998, Cl. 329-50.000.
Veith, Frank J.: *See—*
Ascer, Enrico; Morin, Lee M. E.; and Veith, Frank J., 4,585,010, Cl. 128-673.000.
Vella, Louis C.: *See—*
Mincone, Raymond; Miller, Richard L.; Vella, Louis C.; and Erike, Bosah, 4,585,904, Cl. 179-7.1TP.
Venardos, Dean G.; and Grieves, Colin G., to Standard Oil Company (Indiana). Oil shale retorting and retort water purification process. 4,585,063, Cl. 166-259.000.
Verdini, Antonio S.: *See—*
Di Trapani, Romano; Pinori, Massimo; and Verdini, Antonio S., 4,585,586, Cl. 260-112.50R.
Vernay, Gerard: *See—*
Vernet, Jean L.; Bayle, Philippe; Bienvenu, Georges G.; and Vernay, Gerard, 4,586,172, Cl. 367-97.000.
Vernet, Jean L.; Bayle, Philippe; Bienvenu, Georges G.; and Vernay, Gerard, to Thomson-CSF. Adaptable filtering device and method for filtering sonar signals to remove reverberation signals due to vehicle speed and trim and the sea surface and sea bottom. 4,586,172, Cl. 367-97.000.
Victor Equipment Company: *See—*
Pryor, David A., 4,585,409, Cl. 431-346.000.
Vidas, Aaron L. Portable door locking device. 4,585,259, Cl. 292-339.000.
Viking Phone Company: *See—*
Schiller, Thomas H.; and Bennett, Aubert E., 4,585,903, Cl. 179-2.0EA.
Villasenor-Mejia, Antonio: *See—*
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Vincent, Harold L.: *See—*
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Homan, Gary R.; and Vincent, Harold L., 4,585,836, Cl. 525-477.000.

Virginia: *See—*
Winter, Joseph; and Pryor, Michael J., 4,585,304, Cl. 350-96.210.

Vitkuske, John F.; and Tung, Lu H., to Dow Chemical Company, The. Asphalt-block copolymer articles and method for the preparation thereof. 4,585,816, Cl. 524-68.000.

VMX, Inc.: *See—*
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,585,906, Cl. 179-18.00B.

Vock, Manfred H.: *See—*
Pittet, Alan O.; Muralidhara, Ranya; Luccarelli, Domenick, Jr.; Miller, Kevin P.; and Vock, Manfred H., 4,585,663, Cl. 426-535.000.

Voedisch, John T.: *See—*
Bartilson, Benjamin M.; Kreachbaum, Richard D.; Pettenski, Thomas A.; and Voedisch, John T., 4,584,861, Cl. 72-214.000.

Voelkers, James D.: *See—*
Funk, Gary L.; and Voelkers, James D., 4,586,126, Cl. 364-172.000.

Voest-Alpine Aktiengesellschaft: *See—*
Wrulich, Herwig; Zitz, Alfred; Schetina, Otto; and Schoffmann, Franz, 4,585,275, Cl. 299-81.000.

Vogelgesang, Peter J., to Minnesota Mining and Manufacturing Company. Tape recorder cassette with tamper-proof counter. 4,586,101, Cl. 360-132.000.

Volkman, Thomas M.: *See—*
Rathe, Robert A.; and Volkman, Thomas M., 4,585,132, Cl. 212-268.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Schnurer, Otmar, 4,585,281, Cl. 303-116.000.

von Danwitz, Hans-Otto, to Spanset Inter AG. Identification means for slings. 4,584,785, Cl. 40-316.000.

von Wichert, Nils; and Steinhauer, Jurgen, to Hauni-Werke Korber & Co. KG. Heat-treatment of wrappers in cigarette packing machines and the like. 4,585,503, Cl. 156-351.000.

Vuillet, Alain; and Morelli, Francoise J., to Societe Nationale Industrielle et Aerospatiale. Tail rotor arrangement with increased thrust for rotary wing aircraft and device for increasing the thrust of such an arrangement. 4,585,391, Cl. 415-210.000.

Vyjidacek, Kvetoslav: *See—*
Sitta, Jaroslav; Kopka, Karll; Petrik, Frantisek; and Vyjidacek, Kvetoslav, 4,585,049, Cl. 164-324.000.

Vyvial, Rudolf: *See—*
Wallbillich, Gunter; and Vyvial, Rudolf, 4,585,726, Cl. 430-281.000.

Vyzkumny ustav bavlnarsky: *See—*
Dykast, Jaroslav; Cada, Frantisek; and Kubovy, Miroslay, 4,584,833, Cl. 57-405.000.

W. C. Redmon Company: *See—*
Redmon, C. Peter; Redmon, Samuel C.; and Glass, Henry P., 4,585,283, Cl. 312-250.000.

W. R. Grace & Co.: *See—*
Colarusso, Peter C.; and Siadat, Bahram, 4,585,682, Cl. 428-57.000.
Dumbeck, Robert F.; and Welch, Phillip W., 4,586,146, Cl. 364-551.000.
Ernest, Michael V., 4,585,752, Cl. 502-314.000.
Sinnott, Kenneth M., 4,585,135, Cl. 215-329.000.

Wachi, Masatada, to Nippon Gakki Seizo Kabushiki Kaisha. Tone waveshape generation device. 4,584,921, Cl. 84-1.010.

Wacker-Chemie GmbH: *See—*
Deinhammer, Wolfgang; and Schilling, Bernd, 4,585,863, Cl. 544-319.000.

Wada, Masami: *See—*
Konotsune, Shiro; Higashi, Hiromi; Wada, Masami; Maehara, Hiroshi; and Tsuji, Kazuyuki, 4,585,834, Cl. 525-342.000.

Wada, Tsuneo: *See—*
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Wadle, Heinrich: *See—*
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Waefler, Jean-Pierre: *See—*
Fresnel, Jean-Marie; Debely, Pierre-Etienne; and Waefler, Jean-Pierre, 4,585,618, Cl. 419-12.000.

Wagner, Gary L., to Ford Aerospace & Communications Corporation. Transformerless current balanced amplifier. 4,586,000, Cl. 330-252.000.

Wahl, Georg: *See—*
Dustmann, Cord-Heinrich; Wahl, Georg; Schmaderer, Franz; Fitzer, Erich; Brennfleck, Karl; Dietrich, Manfred; and Paterok, Lienhard, 4,585,696, Cl. 428-375.000.

Waite, J. Herbert, to University of Connecticut Research & Development Corporation. Decapeptides produced from bioadhesive polyphenolic proteins. 4,585,585, Cl. 260-112.50R.

Waitzinger, Franz, to Hudelmaier, Gerhard. Concrete mixer truck. 4,585,355, Cl. 366-55.000.

Wajima, Motoyo: *See—*
Eguchi, Shuji; Taketani, Noriaki; Asano, Hideki; and Wajima, Motoyo, 4,585,841, Cl. 526-240.000.

Wakamatsu, Hiroto. Trimming square set. 4,584,779, Cl. 33-464.000.

Walker, Stephen S.: *See—*
Seiler, Norman C.; and Walker, Stephen S., 4,586,193, Cl. 381-51.000.

Wallbillich, Gunter; and Vyvial, Rudolf, to BASF Aktiengesellschaft. Photopolymerizable water-soluble or water-dispersible mixture containing a salt of nitrous acid. 4,585,726, Cl. 430-281.000.

Wallimann, Hans: *See—*
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,584,951, Cl. 112-97.000.

Wallin, Edwin M.: *See—*
Altavela, Robert P.; Bailey, Raymond E.; Ewing, Joan R.; and Wallin, Edwin M., 4,585,320, Cl. 355-3.0CH.
Ewing, Joan R.; and Wallin, Edwin M., 4,585,323, Cl. 355-3.0CH.

Wallrauch, Alexander: *See—*
Schwenk, Siegfried; Hossler, Andreas; Heyke, Klaus; and Wallrauch, Alexander, 4,586,075, Cl. 357-74.000.

Walsh, David A.; and Welstead, William J., Jr., to A. H. Robins Company, Inc. Cis and trans-3-aryloxy-4-hydroxypyrrolidines used as anti-arrhythmics. 4,585,785, Cl. 514-425.000.

Wang, Chao-Huei J.; Stroupe, Stephen D.; and Jolley, Michael E., to Abbott Laboratories. Fluorescence polarization immunoassay. 4,585,862, Cl. 544-319.000.

Wang, Chih-Chung: *See—*
Chalilpoyil, Purush; Rea, Jesse R.; Parsen, Frank E.; and Wang, Chih-Chung, 4,585,716, Cl. 429-206.000.

Wang, Chun S.; Bowden, Robert L.; and Chen, Wuu N., to Dow Chemical Company, The. Process for preparing epoxy resins containing low levels of total halide. 4,585,838, Cl. 525-507.000.

Wanninkhof, Peter; and Moolenaar, Antonie J., to Skil Nederland B.V. Sanding device. 4,584,797, Cl. 51-170.0EB.

Warabisako, Terunori: *See—*
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Ward, David F. Articulated road vehicle with engine spaced rearwardly of driven wheels. 4,585,088, Cl. 180-295.000.

Ward, Irl E.: *See—*
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Ward, James: *See—*
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Wardlaw, Louis J., III. Method of welding using preheating insert for heavy wall pipe. 4,585,158, Cl. 228-232.000.

Watabe, Masayuki: *See—*
Mori, Yoshikazu; Kojima, Susumu; and Watabe, Masayuki, 4,585,125, Cl. 209-534.000.

Watanabe, Atsushi; and Muramatsu, Hiromochi, to Nippondenso Co., Ltd. Organic battery. 4,585,717, Cl. 429-213.000.

Watanabe, Ichiro: *See—*
Anzai, Kenji; Hamabe, Tatsuo; Watanabe, Ichiro; and Naganuma, Yoshiaki, 4,585,698, Cl. 428-413.000.

Watanabe, Isao: *See—*
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Watanabe, Masae, to Yamaha Hatsudoki Kabushiki Kaisha. Wire wheel with spokes having crank shaped section. 4,585,277, Cl. 301-56.000.

Watanabe, Masao; Nagakura, Hideo; and Yanagisawa, Taminori, to Toyota Jidosha Kabushiki Kaisha. Apparatus for loading or unloading a workpiece. 4,585,389, Cl. 414-752.000.

Watanabe, Noboru: *See—*
Komasaku, Seiichi; Iiyama, Hiroshi; Watanabe, Noboru; and Tanaka, Osamu, 4,584,778, Cl. 33-366.000.

Watanabe, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic depositing/dispensing apparatus. 4,585,928, Cl. 235-379.000.

Waters, Alan D.: *See—*
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Waters, James P.: *See—*
Hasselmark, Earl D.; Waters, James P.; and Wisner, George R., 4,585,978, Cl. 318-118.000.

Waters, Mark H.: *See—*
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Watkins, Ray A.: *See—*
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Watrous, Robert B.: *See—*
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Watt, Peter B., to Eastman Kodak Company. Scanner optics for containing scattered light. 4,586,076, Cl. 358-75.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
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Webb, Paul P., to RCA Inc. Photodetector with isolated avalanche region. 4,586,067, Cl. 357-30.000.

Weber, Eugen: *See—*
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Weber, Gunter, to Neiman S.A. Device for blocking the rotary movement of a steering column. 4,584,857, Cl. 70-184.000.

Weber, Werner, to Heidelberger Druckmaschinen AG. Ink duct for printing presses. 4,584,941, Cl. 101-350.000.

Webster, Christopher R., to United States of America, National Aeronautics and Space Administration. Discharge cell for optogalvanic spectroscopy having orthogonal relationship between the probe laser and discharge axis. 4,585,344, Cl. 356-311.000.

Webster, John R.; and Holroyd, Trevor J., to Rolls-Royce Limited. Component inspection by self generated transient stress wave detection. 4,584,879, Cl. 73-588.000.

Webster, William R., to Allied Paper Incorporated. Method of sealing containers using heat sealable cap stock. 4,585,497, Cl. 156-69.000.
Wedlake, Roger J., to Lilliwyte Societe Anonyme. Battery comprising high temperature rechargeable electrochemical cells and support means. 4,585,712, Cl. 429-50.000.
Wehr Corporation: *See—*
Cooley, Stephen E.; and Jensen, Martin J., 4,585,163, Cl. 236-49.000.
Weigel, David C., to Minnesota Mining and Manufacturing Company. Photothermographic toners. 4,585,734, Cl. 430-619.000.
Weiger, Gunter; Dorrie, Dieter; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. Electrically operated valve. 4,584,980, Cl. 123-458.000.
Weinberg, Zeev A.; and Young, Donald R., to International Business Machines Corporation. Rapid thermal annealing of silicon dioxide for reduced hole trapping. 4,585,492, Cl. 148-1.500.
Weinberger, Edward A. Temporary building structure. 4,584,801, Cl. 52-64.000.
Weir, Fred E.: *See—*
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Weirton Steel Corporation: *See—*
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Weisser, Erich: *See—*
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Weitz, Henry: *See—*
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Welch, John: *See—*
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Welch, Phillip W.: *See—*
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Welch, Robert B.: *See—*
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Wella Aktiengesellschaft: *See—*
Zulauf, Karl H., 4,585,149, Cl. 222-94.000.
Wells, Carl V.: *See—*
Koal, Jan G.; and Wells, Carl V., 4,585,970, Cl. 310-331.000.
Welstead, William J., Jr.: *See—*
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Wendt, Alan C., to United States Gypsum Company. Concealable double acting fastener for wallboard. 4,584,808, Cl. 52-483.000.
Werlich, Harald W.: *See—*
Sincerbox, Glenn T.; Werlich, Harald W.; and Yung, Bwo-Han, 4,585,315, Cl. 350-525.000.
Wesselmann, Mark A., to Dow Chemical Company, The. Monovinylidene aromatic polymer resins having added amounts of high molecular weight polymer. 4,585,825, Cl. 524-504.000.
Wesson, Peter D.: *See—*
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West Electric Company Ltd.: *See—*
Iwata, Hiroshi; Kashihara, Toshitsugu; Iwai, Youichi; and Yamashita, Nobuo, 4,585,313, Cl. 350-429.000.
Westberg, John K., II: *See—*
Liautaud, James P.; Westberg, John K., II; and Stultz, Peter F., 4,585,197, Cl. 248-349.000.
Westin, Leif, to Kloster Speedsteel Aktiebolag. Method of producing high speed steel products metallurgically. 4,585,619, Cl. 419-28.000.
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Cooper, Frank W., Jr.; Andrews, Harry N.; and Randazzo, Matthew J., 4,586,079, Cl. 358-100.000.
DeMario, Edmund E., 4,585,615, Cl. 376-442.000.
DeMario, Edmund E.; and Knott, Ronald P., 4,585,616, Cl. 376-442.000.
Hopwood, Francis W.; and Gipprich, John W., 4,586,044, Cl. 343-7.700.
McClelland, Thomas R., 4,584,836, Cl. 60-646.000.
Snyder, Kurt I., 4,585,946, Cl. 250-506.100.
Wonn, James W.; and McAvoy, Bruce R., 4,586,077, Cl. 358-86.000.
Westman, Stig. Equipment for closing conduits. 4,585,033, Cl. 138-89.000.
Wheat, Thomas E.: *See—*
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White Laboratories, Inc.: *See—*
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Whittier Institute for Diabetes and Endocrinology, The: *See—*
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Chartier, Guy N.; and Wickmann, John T., 4,585,198, Cl. 248-352.000.
Wiedenhofer, Kurt: *See—*
Beck, Ernst; Durst, Alfred; Merk, Heinz; Bernhard, Schuler; Wiedenhofer, Kurt; and Wohlgemuth, Werner, 4,584,852, Cl. 66-120.000.
Wiederstein, Gerd-Walter, to Starkstrom Gummersbach GmbH. Device for regulating linear motion. 4,586,124, Cl. 364-167.000.
Wiegeleben, Adelbert: *See—*
Demus, Dietrich; Zaschke, Horst; Richter, Sabine; Deutscher, Hans-Joachim; and Wiegeleben, Adelbert, 4,585,576, Cl. 252-299.620.
Wieland, Erich G.: *See—*
Germann, Albrecht J.; Munker, Jurgen F. F.; and Wieland, Erich G., 4,584,940, Cl. 101-350.000.
Wilcockson, Brian: *See—*
De Graw, Kenneth J.; Bocchini, William R.; Wilcockson, Brian; Bogossian, Armen; Uhl, Robert J.; Nause, Earl E.; and Ramirez, Ernest R., 4,585,562, Cl. 210-805.000.
Wild, Ernst: *See—*
Clement, Albrecht; Mayer, Dieter; and Wild, Ernst, 4,584,982, Cl. 123-489.000.
Wiley, Gary B.: *See—*
Parkinson, Martin C.; and Wiley, Gary B., 4,584,781, Cl. 34-92.000.
Wilkins, Raymond G.; and Hatch, Bruce O., to Thermal Dynamics Corporation. Torch operation interlock device. 4,585,921, Cl. 219-121.0PT.
Wilkinson, James H., to Sony Corporation. Error concealment in digital television signals. 4,586,082, Cl. 358-160.000.
Wilkinson, James H., to Sony Corporation. Correcting errors in binary data. 4,586,183, Cl. 371-39.000.
Wilkinson, Richard A., Jr.; and Hunt, William C., to Storage Technology Partners II. Brushless direct current motor with inverted magnet clip. 4,585,963, Cl. 310-67.00R.
Wilkinson, William K., to Du Pont de Nemours, E. I., and Company. Process for preparing acid dyeable acrylonitrile polymer having improved whiteness. 4,585,844, Cl. 526-84.000.
Williams, Jeffrey W., to Letcher, Robert L. Neuraminidase treated ancrod. 4,585,653, Cl. 424-98.000.
Williams, Jerry D. Table ball game apparatus. 4,585,235, Cl. 273-355.000.
Williams, Thomas D.; and Usher, Paul, to Roneo Alcatel Limited. Mechanism for feeding similar flat items in succession from a stack thereof. 4,585,218, Cl. 271-10.000.
Willis, Curtiss O.: *See—*
Hall, Charles T.; Woodard, Harry L.; Terry, Jimmy C.; Willis, Curtiss O.; and Hendrix, Phil W., 4,584,914, Cl. 81-176.150.
Wilman, Hugh; and Brotton, James. Document scanners. 4,586,090, Cl. 358-285.000.
Wilson, Patricia Z. Toilet seat lifting and lowering device. 4,584,724, Cl. 4-251.000.
Wilson, Peter. Board game structure. 4,585,233, Cl. 273-256.000.
Wilson, Stephen W.: *See—*
Mullenhoff, Donald J.; and Wilson, Stephen W., 4,586,138, Cl. 364-424.000.
Wilting, Hermanus J. H.: *See—*
Esser, Leonard J. M.; Wilting, Hermanus J. H.; and Stikvoort, Eduard F., 4,586,064, Cl. 357-23.400.
Wimmer, Warren K., to Tektronix, Inc. High speed Boolean logic trigger oscilloscope vertical amplifier with edge sensitivity and nested trigger. 4,585,975, Cl. 315-392.000.
Wimpelberg, George E.: *See—*
Roberts, Jess D.; and Wimpelberg, George E., 4,584,729, Cl. 5-82.00R.
Windhoff, Jochen: *See—*
Reischle, Ferdinand; Windhoff, Jochen; and Bernig, Walter, 4,585,819, Cl. 524-196.000.
Winkley, Michael W.; and McCaully, Ronald J., to American Home Products Corporation. Process for preparing indoline-2-carboxylic acids via alpha-hydroxy-2-nitrobenzenepropanoic acid. 4,585,879, Cl. 548-491.000.
Winter, Alfred: *See—*
Nowak, Gerhard; Winter, Alfred; Morbitzer, Hans P.; Kruschik, Klaus; and Taucher, Robert, 4,585,250, Cl. 280-618.000.
Winter, Joseph; and Pryor, Michael J., to Virginia. Technique for repairing and joining small diameter optical fiber cables. 4,585,304, Cl. 350-96.210.
Winterborn, Ian K.: *See—*
Padfield, John M.; and Winterborn, Ian K., 4,585,790, Cl. 514-471.000.
Winzenburg, Mark L.: *See—*
Fields, Ellis K.; Winzenburg, Mark L.; and De Marco, David A., 4,585,897, Cl. 568-409.000.
Wisner, George R.: *See—*
Hasselmark, Earl D.; Waters, James P.; and Wisner, George R., 4,585,978, Cl. 318-118.000.
Wiva Verpakkingen B.V.: *See—*
Jonkers, Godefridus H. J., 4,585,138, Cl. 220-67.000.
Wodnicki, Tomasz J. Dispenser for collapsible tube contents. 4,585,147, Cl. 222-50.000.
Woebeke, Herman: *See—*
Duncan, Dennis A.; and Woebeke, Herman, 4,585,543, Cl. 208-11.00R.

Wohlgemuth, Werner: *See*—
Beck, Ernst; Durst, Alfred; Merk, Heinz; Bernhard, Schuler; Wiedenhofer, Kurt; and Wohlgemuth, Werner, 4,584,852, Cl. 66-120.000.

Wolf, Mary L., to United States of America, Air Force. Distribution sensitive constant false alarm rate (CFAR) processor. 4,586,043, Cl. 343-5.0CF.

Wolf, Rodney A., to Brandon Woods Associates. Soiless agricultural system and components therefore. 4,584,791, Cl. 47-62.000.

Wollenberg, Robert H., to Chevron Research Company. Carbonate treated dispersants. 4,585,566, Cl. 252-51.50A.

Wolowicz, James P.; and Shaffer, Howard R., to AMP Incorporated. Active pin contact. 4,585,294, Cl. 339-252.00R.

Wolter, Heinz. Device for forming a bunch of keys. 4,584,858, Cl. 70-456.00R.

Wolters, Tjako A.; Ravesteyn, Cornelis J.; and Ruyter, Thomas J. Method and device for maintaining tools at a level. 4,584,784, Cl. 37-58.000.

WOMA Apparatebau: *See*—
Even, Hans-Dieter; Missmahl, Bodo; Redmers, Karl-Heinz; and Rembe, Hubertus, 4,585,168, Cl. 239-74.000.

Wong, David T.; and Lacefield, William B., to Eli Lilly and Company. 1,2,4-triazine derivatives. 4,585,861, Cl. 544-182.000.

Wong, Stephen, to Variable Speech Control Company ("VSC"), The. Audio channel stacking with speech compression for narrow band transmission with provision for dialed calls. 4,586,174, Cl. 370-69.100.

Wonn, James W.; and McAvoy, Bruce R., to Westinghouse Electric Corp. Switched surface acoustic wave apparatus for controlling cable television services. 4,586,077, Cl. 358-86.000.

Woo, Jae L.; and Farah, Boshra D., to Unisearch Limited. Continuous measurement of yarn twist. 4,584,875, Cl. 73-160.000.

Wood, Samuel F.: *See*—
Bedard, Charles J.; Jain, Prem C.; and Wood, Samuel F., 4,586,175, Cl. 370-85.000.

Woodard, Harry L.: *See*—
Hall, Charles T.; Woodard, Harry L.; Terry, Jimmy C.; Willis, Curtiss O.; and Hendrix, Phil W., 4,584,914, Cl. 81-176.150.

Woodfield, Alan A., to National Research Development Corporation. Wind shear detection. 4,585,341, Cl. 356-28.500.

Wool, Arthur L. Orthodontic device. 4,585,413, Cl. 433-8.000.

Wopker, Wilhelm: *See*—
Jung, Karl A.; Jakob, Karl-Heinz; Munzer, Manfred; and Wopker, Wilhelm, 4,585,818, Cl. 524-120.000.

Wright, Harry D.; Hale, John M.; and Weber, Eugen, to Orbisphere Corporation Wilmington, Succursale de Collonge-Bellerive. Thermal protection method for electroanalytical cell and amperometric probe. 4,585,542, Cl. 204-415.000.

Wright, Robert L.: *See*—
Finch, Ronald L.; Wright, Robert L.; and Ball, Graham C. T., 4,585,973, Cl. 315-3.500.

Wrulich, Herwig; Zitz, Alfred; Schetina, Otto; and Schoffmann, Franz, to Voest-Alpine Aktiengesellschaft. Process for spraying the bits and/or the facing with pressurized liquid as well as apparatus for performing this process. 4,585,275, Cl. 299-81.000.

Wu, Andrew L., to Digital Equipment Corporation. Integrated circuit chip processing techniques and integrated chip produced thereby. 4,584,761, Cl. 29-571.000.

Wu, Ching-Tang. Collapsible baby chair. 4,585,271, Cl. 297-174.000.

Wuerzer, Bruno: *See*—
Becker, Rainer; and Wuerzer, Bruno, 4,585,881, Cl. 548-544.000.
Hamprecht, Gerhard; and Wuerzer, Bruno, 4,585,472, Cl. 71-91.000.

Wurminghausen, Thomas: *See*—
Saykowski, Franz; Wurminghausen, Thomas; Stattlegger, Hans; and Achtenberg, Theo, 4,585,849, Cl. 528-17.000.

Wurzburg, Henry, to Motorola, Inc. Precision triangle waveform generator. 4,585,951, Cl. 307-228.000.

Wynn, James A., Jr.: *See*—
Parsons, John M.; Smith, Raymond L.; and Wynn, James A., Jr., 4,586,087, Cl. 358-246.000.

Xerox Corporation: *See*—
Altavela, Robert P.; Bailey, Raymond E.; Ewing, Joan R.; and Wallin, Edwin M., 4,585,320, Cl. 355-3.0CH.
Burnham, Robert; and Holonyak, Nick, Jr., 4,585,491, Cl. 148-1.500.
Ewing, Joan R.; and Wallin, Edwin M., 4,585,323, Cl. 355-3.0CH.
Law, Kock-Yee, 4,585,895, Cl. 564-307.000.
Lin, John W. P.; and Dudek, Lesley P., 4,585,884, Cl. 556-413.000.
Reale, Louis, 4,585,322, Cl. 355-3.0CH.
Shenoy, Vittal U., 4,585,332, Cl. 355-14.00R.
Stoffel, James G.; Statt, William L.; Kluger, Jacob N.; Mason, Lawrence J.; and Ermer, Richard G., 4,585,331, Cl. 355-8.000.

Xico, Inc.: *See*—
Brown, Edmund J.; and Miller, Kenneth L., 4,585,929, Cl. 235-449.000.

Yamada, Sumito: *See*—
Sugimoto, Tadao; and Yamada, Sumito, 4,585,729, Cl. 430-502.000.

Yamada, Yoshihiro: *See*—
Kurata, Kazuyuki; Motoki, Kiyozi; and Yamada, Yoshihiro, 4,586,156, Cl. 364-900.000.

Yamaga, Joji: *See*—
Suzuki, Ryushi; Yamaga, Joji; Matsui, Kunio; and Tsuchiya, Hiroaki, 4,585,465, Cl. 55-52.000.

Yamagishi, Toshio, to Sharp, Kabushiki Kaisha. Separated communication between electrophotographic copying machine and its subsystem. 4,585,333, Cl. 355-14.00R.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Marier, Gregory J., 4,585,429, Cl. 474-12.000.
Ohmi, Masatoshi; and Amano, Junkichi, 4,584,975, Cl. 123-90.380.
Watanabe, Masae, 4,585,277, Cl. 301-56.000.

Yamamoto, Kazushi; and Tanaka, Toyoki, to Sharp Kabushiki Kaisha. Unnecessary charge removing device from a latent image bearing element of electrophotographic copying machine. 4,585,330, Cl. 355-3.00R.

Yamamoto Kogaku Co., Ltd.: *See*—
Yamamoto, Tamenobu, 4,584,721, Cl. 2-424.000.

Yamamoto, Kosei; and Kaneyasu, Akira, to Ube Chemical Industries Co., Inc. High density magnesia clinker and process for its production. 4,585,743, Cl. 501-108.000.

Yamamoto, Sakuei: *See*—
Nishida, Mitsuhiro; Yamamoto, Sakuei; and Inao, Hiroshi, 4,585,966, Cl. 310-87.000.

Yamamoto, Taizo; and Konishi, Hirokazu, to Nippon Elanco Kabushiki Kaisha. Capsule sealing apparatus. 4,584,817, Cl. 53-329.000.

Yamamoto, Takaaki, to Sansui Electric Co., Ltd. Digital waveform shaping circuit. 4,585,952, Cl. 307-268.000.

Yamamoto, Takashi, to Murata Manufacturing Co., Ltd. Composite part of piezo-electric resonator and condenser and method of producing same. 4,586,110, Cl. 361-307.000.

Yamamoto, Tamenobu, to Yamamoto Kogaku Co., Ltd. Device for use in helmet for preventing fogging by electric heating. 4,584,721, Cl. 2-424.000.

Yamamoto, Toshimasa: *See*—
Izuchi, Shingo; Yamamoto, Toshimasa; and Mori, Shinji, 4,585,186, Cl. 242-107.40D.

Yamamuro, Sigeaki: *See*—
Abo, Keiju; Kumura, Haruyoshi; Tanaka, Yoshikazu; Hirano, Hiroyuki; and Yamamuro, Sigeaki, 4,584,909, Cl. 74-868.000.

Yamanaka, Hideaki: *See*—
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,585,860, Cl. 544-22.000.

Yamane, Keiji: *See*—
Kanda, Katsumi; Kunimoto, Katsunobu; Yamane, Keiji; and Kondo, Yoshikazu, 4,585,529, Cl. 204-27.000.

Yamashita, Hiroki: *See*—
Itoh, Hiroyuki; Masaki, Akira; Yamashita, Hiroki; and Hososaka, Satoshi, 4,586,169, Cl. 365-190.000.

Yamashita, Nobuo: *See*—
Iwata, Hiroshi; Kashihara, Toshitsugu; Iwai, Youichi; and Yamashita, Nobuo, 4,585,313, Cl. 350-429.000.

Yamaura, Yutaka: *See*—
Soyama, Kazuya; Nakamura, Takashi; and Yamaura, Yutaka, 4,584,954, Cl. 112-275.000.

Yamazaki, Hiroshi; Isayama, Takuro; Ameyama, Minoru; Matsumoto, Shuzo; and Katano, Yasuo, to Ricoh Company, Ltd. Ink jet printing apparatus. 4,586,058, Cl. 346-140.0CR.

Yanadori, Michio; Miyamoto, Seigo; and Koike, Keiichi, to Hitachi, Ltd. Heat storage material and process for producing the same. 4,585,573, Cl. 252-70.000.

Yanagisawa, Taminori: *See*—
Watanabe, Masao; Nagakura, Hideo; and Yanagisawa, Taminori, 4,585,389, Cl. 414-752.000.

Yanagishima, Takayuki: *See*—
Seko, Yasutoshi; Yanagishima, Takayuki; and Fukasawa, Noburu, 4,586,032, Cl. 340-576.000.

Yancey, Robert E., Jr.; and Hettinger, William P., Jr., to Ashland Oil, Inc. Process for the production of aromatic fuel. 4,585,545, Cl. 208-74.000.

Yang, Yung-hsiung: *See*—
Tomimaga, Michiaki; Yang, Yung-hsiung; Ogawa, Hidenori; and Nakagawa, Kazuyuki, 4,585,774, Cl. 514-255.000.

Yanker, George M., to International Business Machines Corporation. Lift device of the scissor-jack type. 4,585,212, Cl. 254-122.000.

Yarberry, Scott H.: *See*—
Rector, Robert E.; Taylor, Larry T.; Yarberry, Scott H.; and Grassi, Richard J., 4,586,157, Cl. 364-900.000.

Yasaitis, John A.: *See*—
Raffel, Jack I.; Yasaitis, John A.; Chapman, Glenn H.; and Naiman, Mark L., 4,585,490, Cl. 148-1.500.

Yasuda, Hiroshi; and Tsuchikawa, Haruo, to Fujitsu Limited. Electron beam exposure apparatus. 4,585,943, Cl. 250-396.00R.

Yasuda, Hiroshi; Tsuchikawa, Haruo; Kai, Junichi; and Kobayashi, Koichi, to Fujitsu Limited. Method and apparatus for an electron beam exposure system. 4,586,141, Cl. 364-490.000.

Yasukawa, Akira: *See*—
Nakayama, Wataru; Daikoku, Takahiro; Nakajima, Tadakatsu; Kuwahara, Heikichi; and Yasukawa, Akira, 4,585,055, Cl. 165-115.000.

Yeda Research and Development Co., Ltd.: *See*—
Levy, Moshe; Gassner, Shaul A.; and Farber, Reuben, 4,584,722, Cl. 623-13.000.

Yeh, An-I: *See*—
Berg, Lloyd; and Yeh, An-I, 4,585,526, Cl. 203-64.000.

Yokohama Rubber Co., Ltd., The: *See*—
Morikawa, Tuneo; and Kabe, Kazuyuki, 4,585,045, Cl. 152-536.000.

Yokoyama, Hiroyoshi: *See*—
Uozu, Nobuo; Yokoyama, Hiroyoshi; and Matsuda, Yoichi, 4,585,502, Cl. 156-278.000.

Yonahara, Kunio; Miyagawa, Hiroshi; and Aimoto, Shingo, to Kabushiki Kaisha Meidensha. Electrically conductive plastic complex material. 4,585,578, Cl. 252-511.000.

Yoneda, Takao; and Sakakibara, Yasuji, to Toyoda Koki Kabushiki Kaisha. Numerical control grinding machine. 4,584,796, Cl. 51-165.710.

Yorita, Mitsumasa, to Mitsubishi Denki Kabushiki Kaisha. Bellows device. 4,585,913, Cl. 200-144.00B.

Yoshida, Kazuo; and Umemoto, Tadahiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Method for relieving residual stresses by build-up welding over outer surface of pipe. 4,585,917, Cl. 219-76.100.

Yoshida, Takehiko: *See*—
Yoshioka, Takatoshi; Kirihara, Seishin; Siga, Masao; Kuriyama, Mitsuo; Yoshida, Takehiko; and Murohoshi, Takanori, 4,585,478, Cl. 75-124.000.

Yoshida, Takeshi: *See*—
Aoki, Masahiro; Saito, Kiichi; Yoshida, Takeshi; Ikeda, Noriyasu; Takahashi, Masanori; Okubo, Masao; and Nagayama, Masaaki, 4,585,479, Cl. 75-128.00N.

Yoshio, Miyauchi: *See*—
Katayama, Masanori; Yoshio, Miyauchi; and Akira, Okada, 4,585,335, Cl. 355-29.000.

Yoshioka, Takatoshi; Kirihara, Seishin; Siga, Masao; Kuriyama, Mitsuo; Yoshida, Takehiko; and Murohoshi, Takanori, to Hitachi, Ltd. Heat resisting steel. 4,585,478, Cl. 75-124.000.

Yoshitsugu, Noritada; Hashimoto, Masakazu; and Matsuzaki, Yutaka, to Toyota Jidosha Kabushiki Kaisha. Seatbelt system. 4,585,251, Cl. 280-804.000.

Young, Dennis: *See*—
Barri, Sami A. I.; and Young, Dennis, 4,585,641, Cl. 423-331.000.

Young, Donald R.: *See*—
Weinberg, Zeev A.; and Young, Donald R., 4,585,492, Cl. 148-1.500.

Young, Galen F.; and Swords, Bernell E. Paraformaldehyde gas generator for fumigating animal houses. 4,585,624, Cl. 422-305.000.

Youngjohn, Norman R.: *See*—
Su, Tien-Kuei; and Youngjohn, Norman R., 4,585,817, Cl. 524-108.000.

Yu, Kin C.: *See*—
Murray, Thomas L., Jr.; Yu, Kin C.; and Holtey, Thomas O., 4,586,129, Cl. 364-200.000.

Yui, Yasuo: *See*—
Chikarainhi, Takayo; and Yui, Yasuo, 4,585,257, Cl. 292-1.000.

Yung, Bwo-Han: *See*—
Sincerbox, Glenn T.; Werlich, Harald W.; and Yung, Bwo-Han, 4,585,315, Cl. 350-525.000.

Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, to Ciba Geigy AG. Antibiotics, a process for their preparation and their use as plant protection agents. 4,585,761, Cl. 514-43.000.

Zahnraderfabrik Renk A.G.: *See*—
Hirt, Manfred; and Arndt, Heinrich, 4,584,903, Cl. 74-675.000.

Zakharov, Jury V.: *See*—
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Kochnev, Anatoly M.; Nikomarov, Samuil S.; Semenets, Valery I.; Tolsky, Jury K.; Zakharov, Jury V.; and Shumilov, Valerian P., 4,585,401, Cl. 418-5.000.

Zaschke, Horst: *See*—
Demus, Dietrich; Zaschke, Horst; Richter, Sabine; Deutscher, Hans-Joachim; and Wiegeleben, Adelbert, 4,585,576, Cl. 252-299.620.

Zemke, Anne, legal representative: *See*—
Zemke, Edward H., deceased; Pogue, Harold D.; Shah, Girish B.; and Bowles, Myron A., 4,585,220, Cl. 270-54.000.

Zemke, Edward H., deceased (by Zemke, Anne, legal representative); Pogue, Harold D.; Shah, Girish B.; and Bowles, Myron A., to Bell & Howell Company. Method of operating insertion machine and printer with control signals stored on searchable medium. 4,585,220, Cl. 270-54.000.

Zenith Electronics Corporation: *See*—
Citta, Richard W.; Sgrignoli, Gary J.; and Mutzabaugh, Dennis M., 4,586,078, Cl. 358-86.000.
Sirazi, Semir; and Zinger, Thomas E., 4,586,179, Cl. 371-12.000.

Zerwekh, Paul S.: *See*—
Rollyson, Richard A.; Wesson, Peter D.; and Zerwekh, Paul S., 4,585,600, Cl. 264-3.300.

Zimmer, Johannes: *See*—
Reinhold, Gasper, 4,586,014, Cl. 335-296.000.

Zimmer, Ronald. Golf scoring device. 4,584,961, Cl. 116-223.000.

Zimmerman, S. Mort; and Broz, Joseph. Electromagnetic radio frequency excited explosion proof lighting method and system. 4,586,115, Cl. 362-217.000.

Zinger, Baruch: *See*—
Miller, Larry L.; Blankespoor, Ronald L.; and Zinger, Baruch, 4,585,652, Cl. 424-83.000.

Zinger, Thomas E.: *See*—
Sirazi, Semir; and Zinger, Thomas E., 4,586,179, Cl. 371-12.000.

Zintler, Albert, to Webasto-Werk W. Baier GmbH & Co. Device for driving motor-operated closure parts. 4,585,981, Cl. 318-615.000.

Zitz, Alfred: *See*—
Wrulich, Herwig; Zitz, Alfred; Schetina, Otto; and Schoffmann, Franz, 4,585,275, Cl. 299-81.000.

Zlokarnik, Marko; Schindler, Georg; Koepke, Gunther; and Stracke, Werner, to Agfa-Gevaert Aktiengesellschaft. Flotation process for the continuous recovery of silver or silver compounds from solutions or dispersions. 4,585,561, Cl. 210-705.000.

Zoebelein, Gerhard: *See*—
Zahner, Hans; Holst, Hartwig; Zoebelein, Gerhard; and Keckeisen, Adelinde, 4,585,761, Cl. 514-43.000.

Zorn, Reinhard: *See*—
Czeschka, Franz; Reichenecker, Egon; and Zorn, Reinhard, 4,585,293, Cl. 339-221.00R.

Zulauf, Karl H., to Wella Aktiengesellschaft. Double container for two separated fluids. 4,585,149, Cl. 222-94.000.

Zuppiroli, Libero: *See*—
Bouffard, Serge J. H.; Zuppiroli, Libero; Jerome, Denis; and Bechgaard, Klaus, 4,586,062, Cl. 357-5.000.

Zutt, Martin J., Jr.: *See*—
Klueh, David R.; Livingston, Benjamin F.; Martone, James F.; and Zutt, Martin J., Jr., 4,585,692, Cl. 428-317.900.

Zweifel, Hans: *See*—
Fischer, Walter; Finter, Jurgen; and Zweifel, Hans, 4,585,876, Cl. 548-423.000.

Zymark Corporation: *See*—
Buote, William J., 4,586,151, Cl. 364-513.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF APRIL, 1986

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abner, Harold D., to Procter & Gamble Company, The. Composite can with compressed end to provide easy opening. Re. 32,127, Cl. 229-5.600.

Akiyama, Toshiyuki: *See*—
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, Re. 32,132, Cl. 360-65.000.

Aoki, Katashi, to Nissie ASB Machine Co., Ltd. Injection blow molding machine. Re. 32,129, Cl. 425-525.000.

Blumle, Martin, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG. Transport apparatus for transporting flexible sheet-like articles. Re. 32,128, Cl. 271-94.000.

Frederickson, Walter G.; Heitmann, Albert W.; Jones, George M.; and Thrailkill, Howard A., to Harris Corporation. Apparatus for editing and correcting displayed text. Re. 32,130, Cl. 340-726.000.

Harris Corporation: *See*—
Frederickson, Walter G.; Heitmann, Albert W.; Jones, George M.; and Thrailkill, Howard A., Re. 32,130, Cl. 340-726.000.

Heitmann, Albert W.: *See*—
Frederickson, Walter G.; Heitmann, Albert W.; Jones, George M.; and Thrailkill, Howard A., Re. 32,130, Cl. 340-726.000.

Hitachi, Ltd.: *See*—
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, Re. 32,132, Cl. 360-65.000.

Hitachi Metals, Ltd.: *See*—
Sasaki, Yoshitaka, Re. 32,126, Cl. 100-158.00R.

Jolliff, Norman E.: *See*—
Von Kaler, Roland L.; and Jolliff, Norman E., Re. 32,125, Cl. 74-371.000.

Jones, George M.: *See*—
Frederickson, Walter G.; Heitmann, Albert W.; Jones, George M.; and Thrailkill, Howard A., Re. 32,130, Cl. 340-726.000.

Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, to Hitachi, Ltd. Video signal play-back circuit. Re. 32,132, Cl. 360-65.000.

Nissie ASB Machine Co., Ltd.: *See*—
Aoki, Katashi, Re. 32,129, Cl. 425-525.000.

Procter & Gamble Company, The: *See*—
Abner, Harold D., Re. 32,127, Cl. 229-5.600.

Sasaki, Yoshitaka, to Hitachi Metals, Ltd. Toner image pressure-fixing device. Re. 32,126, Cl. 100-158.00R.

Shibata, Akira: *See*—
Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, Re. 32,132, Cl. 360-65.000.

Stahl, James P., to Thomas & Betts Corporation. Fire protective tape. Re. 32,131, Cl. 428-215.000.

Tecumseh Products Company: *See*—
Von Kaler, Roland L.; and Jolliff, Norman E., Re. 32,125, Cl. 74-371.000.

Thomas & Betts Corporation: *See*—
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Thrailkill, Howard A.: *See*—
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Nakamura, Hisashi; Akiyama, Toshiyuki; Shibata, Akira; and Tokunaga, Yoichi, Re. 32,132, Cl. 360-65.000.

Von Kaler, Roland L.; and Jolliff, Norman E., to Tecumseh Products Company. Transmission. Re. 32,125, Cl. 74-371.000.

Winkler & Dunnebier Maschinenfabrik und Eisengiesserei GmbH & Co. KG: *See*—
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International Flavors & Fragrances Inc.: *See*—
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Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, B1 4,301,302, Cl. 568-373.000.

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O'Rourke, Thomas J.: *See*—
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Sanders, James M.: *See*—
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Schreiber, William L.: *See*—
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Laslo, Larry R., 283,580, Cl. D7-137.000.
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American Telecommunications Corporation: *See*—
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Battarel, Alain; and Picard, Jean-Marc, to Gipelec, S.A. Waterproof flashlight. 283,646, 4-29-86, Cl. D26-49.000.

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Bernard, Francois, to Beghin-Say S.A. Towel dispenser. 283,574, 4-29-86, Cl. D6-522.000.

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Biddle, Ernest L., Jr.; and Wessells, Henry W., III, to King Tester Corporation. Material hardness tester or similar article. 283,599, 4-29-86, Cl. D10-46.000.

Blake, Alfred, to American Commercial, Incorporated. Cream pitcher. 283,583, 4-29-86, Cl. D7-303.000.

Bridgestone Tire Company Limited: *See*—
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Brown Jordan Company: *See*—
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Campbell, Robert B., to BBC International Ltd. Sport shoe. 283,556, 4-29-86, Cl. D2-309.000.

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Hewitt, Stephen K.; Carlsson, Per-Arne; and Darhult, Bengt, 283,629, Cl. D18-15.000.

Casberg, John M., to Olin Corporation. Swimming pool chemical tablet. 283,649, 4-29-86, Cl. D28-2.000.

Champion, Odus R. Gun cabinet. 283,571, 4-29-86, Cl. D6-470.000.

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Cosco, Inc.: *See*—
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Dean, George K. Video game joystick holder. 283,569, 4-29-86, Cl. D6-449.000.

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Fisher, Kermit W., to International Vehicles Corp. Van top. 283,610, 4-29-86, Cl. D12-156.000.

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Fortuna, Vincent E.; and MacLaughlin, Donald N., to Vercon, Inc. Packaging container. 283,596, 4-29-86, Cl. D9-349.000.

Fortuna, Vincent E.: *See*—
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Fuller, David L.; Moss, Bryan T.; and Smith, Joe H. Thermometer assembly. 283,602, 4-29-86, Cl. D10-57.000.

Garrard, Clive W., to British Telecommunications. Telephone instrument base. 283,619, 4-29-86, Cl. D14-61.000.

Gauer, Daniel S.; Alseth, Steven M.; and Sullivan, Bruce M., to Donaldson Company, Inc. Air cleaner. 283,621, 4-29-86, Cl. D15-5.000.

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Haas, Ulrich J., to Optyl Eyewear Fashion International Corporation. Eyeglass frame. 283,626, 4-29-86, Cl. D16-102.000.

Hagiwara, Fumio, to Varitronic Systems, Inc. Printing machine. 283,628, 4-29-86, Cl. D18-13.000.

Hammond, Robert C. Cribbage board or the like. 283,600, 4-29-86, Cl. D10-46.100.

Harig, Robert G., to Darling Store Fixtures. Showcase. 283,572, 4-29-86, Cl. D6-470.000.
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Hewitt, Stephen K.; Carlsson, Per-Arne; and Darhult, Bengt. Adjustable dater. 283,629, 4-29-86, Cl. D18-15.000.
Hofer, Otto. Packaging containers for ampules or the like. 283,593, 4-29-86, Cl. D9-341.000.
Houston, Dewey A., to Twin City Knitting Company, Inc. Athletic sock. 283,557, 4-29-86, Cl. D2-331.000.
Huffman, Ronald E., to KV33 Corporation. Set of molded quadrant base dental casts with pedestal. 283,639, 4-29-86, Cl. D24-16.000.
Ibaraki, Howard T., to Mr. Gasket Company. Automobile buffer. 283,590, 4-29-86, Cl. D8-62.000.
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Kato, Yuji; and Nuttall, Michael W., to Tomy Kogyo Company, Inc. Toy construction piece. 283,635, 4-29-86, Cl. D21-108.000.
Kawabata, Misao; and Yamaguchi, Koujiro, to Bridgestone Tire Company Limited. Automobile tire. 283,609, 4-29-86, Cl. D12-147.000.
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Kirk, Alexis V., to Somersett Moon Ltd. Belt buckle. 283,559, 4-29-86, Cl. D2-427.000.
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Nakamura, Manao; Kido, Katsutoshi; and Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Combined radio receiver and tape recorder. 283,613, 4-29-86, Cl. D14-5.000.
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Otake, Katsuhiro, to American Commercial, Incorporated. Cream pitcher. 283,587, 4-29-86, Cl. D7-319.000.
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Strand, Gordon A., 283,597, Cl. D9-390.000.
Pendelton, Thomas J.: *See—*
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Penn Engineering & Manufacturing Corp.: *See—*
Swanstrom, Kenneth A., 283,591, Cl. D8-387.000.
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Peterson, Dana. Combined spatula, scraper and peeler. 283,579, 4-29-86, Cl. D7-102.000.
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Battarel, Alain; and Picard, Jean-Marc, 283,646, Cl. D26-49.000.
Pizza Hut, Inc.: *See—*
Erlandson, John A.; and Engoron, Edward, 283,589, Cl. D7-347.000.
PMT Inc.: *See—*
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Quarrell, Richard; and Ransom, Paul A., to General Mills Products Corp. Container for displaying and storing articles. 283,592, 4-29-86, Cl. D9-337.000.
Raftery, William B., to Steelcase Inc. Seat. 283,562, 4-29-86, Cl. D6-334.000.

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Read, Clifford D.: *See—*
Brown, Michael; Read, Clifford D.; and Ellis, Warren K., 283,616, Cl. D14-60.000.
Reed, Stewart D.; and Hayamoto, Toru. Automobile. 283,603, 4-29-86, Cl. D12-90.000.
Ricoh Company, Ltd.: *See—*
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Sullivan, Bruce M.: *See—*
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Swanstrom, Kenneth A., to Penn Engineering & Manufacturing Corp. Low profile panel fastener. 283,591, 4-29-86, Cl. D8-387.000.
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Timmington, David A. Anode for cathodic protection of chain links. 283,612, 4-29-86, Cl. D13-99.000.
Tomy Kogyo Company, Inc.: *See—*
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Tomy Kogyo, Inc.: *See—*
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Tyke Corporation: *See—*
Wilson, Michael C., 283,565, Cl. D6-348.000.
Uchin, Stanley, to Louis Lefkowitz & Brother, Inc. Camera-supporting platform insert for camera bags. 283,560, 4-29-86, Cl. D3-33.000.
Ullman, Myron E., Jr.; and Kessler, Brian D., to Space-Links, Inc. Circular mount for ribbed floor mats. 283,577, 4-29-86, Cl. D6-587.000.
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Gravener, Roy D.; Green, David T.; Korthoff, Herbert W.; and McGarry, Richard A., 283,642, Cl. D24-27.000.
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Fortuna, Vincent E.; and MacLaughlin, Donald N., 283,596, Cl. D9-349.000.
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Wessells, Henry W., III: *See—*
Biddle, Ernest L., Jr.; and Wessells, Henry W., III, 283,599, Cl. D10-46.000.
Williams, Ivan P., to Oakland Design Products Limited. Crossbow. 283,637, 4-29-86, Cl. D22-5.000.
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Kriloff, Michel, 5,729, Cl. 11.000.
Jolly, Nelson F., to Jolly's Rosehill Farm of Kent, Inc. Rose plant. 5,728, 4-29-86, Cl. 9.000.
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Flemer, William, III, 5,730, Cl. 37.000.
University of Illinois: *See—*
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Yoder Brothers, Inc.: *See—*
Duffett, William E., 5,733, Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 29, 1986

NOTE—First number, class; second number, subclass; third number, patent number

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10.55 E 4,585,915
10.61 R 4,585,916
76.1 4,585,917
110 4,585,918
121 LK 4,585,919
121 PR 4,585,920
121 PT 4,585,921
205 4,585,924
212 4,585,922
400 4,585,923
497 4,585,925
506 4,585,926

CLASS 220

3 4,585,136
21 4,585,137
67 4,585,138
256 4,585,139
268 4,585,140
326 4,585,141
331 4,585,142
462 4,585,143

CLASS 221

7 4,585,144
58 4,585,145

CLASS 222

1 4,585,146
50 4,585,147
77 4,585,148
94 4,585,149
129 4,585,150
153 4,585,151

CLASS 225

1 4,585,152

CLASS 227

19 4,585,153
109 4,585,154

CLASS 228

107 4,585,155
132 4,585,156
180.2 4,585,157
232 4,585,158

CLASS 229

5.6 Re.32,127
41 R 4,585,159
92.3 4,585,160

CLASS 235

70 R 4,585,927
379 4,585,928
449 4,585,929
4,585,930
464 4,585,931

CLASS 236

15 BD 4,585,161
47 4,585,162
49 4,585,163
51 4,585,164

CLASS 237

8 R 4,585,165

CLASS 238

10 R 4,585,166

CLASS 239

4 4,585,167
74 4,585,168
75 4,585,169
85 4,585,170
88 4,585,171
265.33 4,585,172
453 4,585,173
533.8 4,585,174
553 4,585,175
585 4,585,176
590 4,585,177

CLASS 241

23 4,585,178
101.7 4,585,179
186 A 4,585,180

CLASS 242

43 A 4,585,181
84.1 M 4,585,182
84.52 B 4,585,183
107 4,585,184
4,585,185
107.4 D 4,585,186
198 4,585,187
219 4,585,188

CLASS 244

54 4,585,189
151 B 4,585,190
169 4,585,191
214 4,585,192

CLASS 248

49 4,585,193
52 4,585,194
118 4,585,195
214 4,585,196
349 4,585,197
352 4,585,198
359 4,585,199
487 4,585,200
523 4,585,201
553 4,585,202
652 4,585,203

CLASS 249

28 4,585,204

CLASS 250

201 4,585,933
211 J 4,585,934
213 VT 4,585,935
223 R 4,585,936
227 4,585,937
235 4,585,938
256 4,585,939
336.1 4,585,940
363 S 4,585,941
380 4,585,932
396 ML 4,585,942
396 R 4,585,943
484.1 4,585,944
492.2 4,585,945
506.1 4,585,946
560 4,585,947
578 4,585,948

CLASS 251

26 4,585,205
30.02 4,585,206
62 4,585,207
96 4,585,208
129.02 4,585,209
214 4,585,210

CLASS 252

8.8 4,585,563
32.5 4,585,564
49.5 4,585,565
51.5 A 4,585,566
58 4,585,567
62.59 4,585,568
69 4,585,569
70 4,585,571
4,585,572
4,585,573
102 4,585,570
299.1 4,585,574
299.61 4,585,575
299.62 4,585,576
305 4,585,577
387 4,585,579
511 4,585,578
517 4,585,580
518 4,585,581
522 R 4,585,582
628 4,585,583

CLASS 254

10.5 4,585,211
122 4,585,212
386 4,585,213

CLASS 256

65 4,585,214

CLASS 260

104 4,585,584
112.5 R 4,585,585
4,585,586
4,585,587
239 D 4,585,588
239.3 P 4,585,589
239.55 C 4,585,590
397.4 4,585,591
408 4,585,592
410.7 4,585,593
410.9 R 4,585,594
463 4,585,596
507 R 4,585,597
947 4,585,598

CLASS 261

2 4,585,599

CLASS 264

3.3 4,585,600
12 4,585,601
37 4,585,602
40.6 4,585,603
41 4,585,604
51 4,585,605
156 4,585,606
229 4,585,607

CLASS 267

124 4,585,215
150 4,585,216

CLASS 269

56 4,585,217

CLASS 270

46 4,585,219
54 4,585,220

CLASS 271

10 4,585,218
4,585,221
94 Re.32,128
106 4,585,222
121 4,585,223
127 4,585,224
211 4,585,225
264 4,585,226
270 4,585,227

CLASS 272

119 4,585,228
123 4,585,229

CLASS 273

63 A 4,585,230
155 4,585,231
248 4,585,232
256 4,585,233
271 4,585,234
355 4,585,235

CLASS 277

38 4,585,236
139 4,585,237
205 4,585,238
4,585,239

CLASS 279

111 4,585,240

CLASS 280

5.22 4,585,241
153 R 4,585,242
154.5 R 4,585,243
260 4,585,244
277 4,585,245
281 R 4,585,246
4,585,247
432 4,585,248
609 4,585,249
618 4,585,250
804 4,585,251
820 4,585,252

CLASS 283

39 4,585,253
81 4,585,254

CLASS 285

93 4,585,255
190 4,585,256

CLASS 290

1 C 4,585,949
44 4,585,950

CLASS 292

1 4,585,257
125 4,585,258
216 4,585,261
339 4,585,259

CLASS 294

145 4,585,260

CLASS 296

1 S 4,585,262
4,585,263
4,585,265
3 4,585,264
100 4,585,266
4,585,267
102 4,585,268
214 4,585,269

CLASS 297

16 4,585,270
174 4,585,271
284 4,585,272
452 4,585,273

CLASS 299

7 4,585,274
81 4,585,275

CLASS 301

36 R 4,585,276
56 4,585,277

CLASS 303

7 4,585,278
22 R 4,585,279
100 4,585,280
116 4,585,281

CLASS 307

228 4,585,951
268 4,585,952
270 4,585,953
296 R 4,585,954
297 4,585,955
353 4,585,956
455 4,585,957
473 4,585,958
4,585,959
490 4,585,960
491 4,585,961
570 4,585,962

CLASS 308

10 4,585,282

CLASS 310

67 R 4,585,963
71 4,585,964
87 4,585,966
217 4,585,967
239 4,585,968
328 4,585,969
331 4,585,970

CLASS 312

250 4,585,283

CLASS 313

341 4,585,971
636 4,585,972

CLASS 315

3.5 4,585,973
39.3 4,585,965
307 4,585,974
370 4,585,976
392 4,585,975

CLASS 318

45 4,585,977
118 4,585,978
254 4,585,979
444 4,585,980
615 4,585,981
723 4,585,982
4,585,983
750 4,585,984
803 4,585,985

CLASS 323

271 4,585,986
275 4,585,987
285 4,585,988

CLASS 324

83 D 4,585,989
102 4,585,990
158 P 4,585,991
309 4,585,992
4,585,993
318 4,585,994
322 4,585,995
442 4,585,996

CLASS 328

165 4,585,997

CLASS 329

50 4,585,998

CLASS 330

61 R 4,585,999
252 4,586,000
267 4,586,001
297 4,586,002
4,586,003
300 4,586,004

CLASS 331

1 A 4,586,005
69 4,586,006

CLASS 333

19 4,586,008
156 4,586,009
165 4,586,010
175 4,586,007

CLASS 335

6 4,586,011
216 4,586,012
276 4,586,013
296 4,586,014

CLASS 336

84 C 4,586,015
96 4,586,016

CLASS 338

32 S 4,586,017
42 4,586,018
195 4,586,019
238 4,586,020

CLASS 339

17 C 4,585,284
17 LC 4,585,285
31 M 4,585,286
60 C 4,585,287
75 MP 4,585,288
89 C 4,585,289
97 R 4,585,290
117 R 4,585,291
143 R 4,585,292
221 R 4,585,293
252 R 4,585,294
258 R 4,585,295

CLASS 340

134 4,586,021
347 AD 4,586,022
4,586,026
347 DD 4,586,023
4,586,024
4,586,025
4,586,027
500 4,586,028
540 4,586,029
550 4,586,030
566 4,586,031
576 4,586,032
603 4,586,033
679 4,586,034
712 4,586,035
720 4,586,036
726 Re.32,130
728 4,586,037
729 4,586,038
784 4,586,039
825.08 4,586,040
931 4,586,041

CLASS 343

5 CF 4,586,043
5 VQ 4,586,042

7.7 4,586,044
18 E 4,586,045
4,586,046
372 4,586,047
379 4,586,048
414 4,586,049
426 4,586,050
703 4,586,051
713 4,586,052

CLASS 346

1.1 4,586,053
76 PH 4,586,054
4,586,055
4,586,056
108 4,586,057
140 R 4,586,058
153.1 4,586,059
215 4,586,060
216 4,586,061

CLASS 350

6.5 4,585,296
6.8 4,585,297
96.10 4,585,298
96.12 4,585,299
96.20 4,585,300
4,585,301
4,585,302
4,585,303
96.21 4,585,304
4,585,305
96.34 4,585,306
162.22 4,585,307
252 4,585,308
322 4,585,309
341 4,585,310
347 V 4,585,311
357 4,585,312
429 4,585,313
464 4,585,314
525 4,585,315
582 4,585,316
628 4,585,317

CLASS 353

3 4,585,318

CLASS 355

3 CH 4,585,320
4,585,321
4,585,322
4,585,323
3 DD 4,585,326
4,585,328
3 FU 4,585,325
3 R 4,585,319
4,585,324
4,585,327
4,585,329
4,585,330
3 SH 4,585,336
8 4,585,331
14 R 4,585,332
4,585,333
25 4,585,334
29 4,585,335
45 4,585,337
56 4,585,338
69 4,585,339
91 4,585,340

CLASS 356

28.5 4,585,341
124 4,585,342
237 4,585,343
311 4,585,344
346 4,585,345
350 4,585,346
4,585,347
369 4,585,348
375 4,585,349
4,585,350
388 4,585,351
444 4,585,352

CLASS 357

5 4,586,062
22 4,586,063
23.4 4,586,064
23.5 4,586,065
30 4,586,066
4,586,067
4,586,068
4,586,069
34 4,586,071
4,586,072
38 4,586,070
45 4,586,073
58 4,586,074
74 4,586,075

CLASS 358

75 4,586,076
86 4,586,077
4,586,078
100 4,586,079
106 4,586,080
121 4,586,081
160 4,586,082
167 4,586,083
212 4,586,084
244 4,586,085
246 4,586,087
256 4,586,086
257 4,586,088
280 4,586,089
285 4,586,090

CLASS 360

40 4,586,091
59 4,586,092
65 Re.32,132
73 4,586,093
77 4,586,094
93 4,586,095
96.5 4,586,096
99 4,586,097
109 4,586,098
128 4,586,099
4,586,100
132 4,586,101
133 4,586,102
137 4,586,103

CLASS 361

91 4,586,104
117 4,586,105
212 4,586,106
272 4,586,107
283 4,586,108
4,586,109
307 4,586,110
323 4,586,111
330 4,586,112

CLASS 362

72 4,586,113
191 4,586,114
217 4,586,115
293 4,586,116
373 4,586,117

CLASS 363

17 4,586,118
4,586,119
21 4,586,120
87 4,586,121
126 4,586,122

CLASS 364

167 4,586,123
4,586,124
4,586,125
172 4,586,126
200 4,586,127
4,586,128
4,586,129
4,586,130
4,586,131
4,586,133
4,586,134
414 4,586,135
418 4,586,136
422 4,586,137
424 4,586,138
431.02 4,586,139
433 4,586,140
490 4,586,141
507 4,586,142
509 4,586,143
510 4,586,144
512 4,586,145
513 4,586,151
550 4,586,147
4,586,148
551 4,586,146
557 4,586,149
562 4,586,150
718 4,586,152
728 4,586,153
748 4,586,154
841 4,586,155
900 4,586,156
4,586,157
4,586,158
4,586,159
4,586,160

CLASS 365

51 4,586,162
104 4,586,163
122 4,586,161
126 4,586,165
127 4,586,164
154 4,586,166
189 4,586,167
4,586,168
190 4,586,169
200 4,586,170
205 4,586,171

CLASS 366

11 4,585,353
25 4,585,354
55 4,585,355
60 4,585,356
176 4,585,357

CLASS 367

97 4,586,172

CLASS 368

262 4,585,358

CLASS 369

275 4,586,173

CLASS 370

69.1 4,586,174
85 4,586,175
4,586,176
104 4,586,177

CLASS 371

10 4,586,178
12 4,586,179
14 4,586,180
27 4,586,181
30 4,586,182
39 4,586,183

CLASS 372

28 4,586,184
34 4,586,185

CLASS 373

106 4,586,187
108 4,586,188

CLASS 375

3 4,586,186
117 4,586,189

CLASS 376

245 4,585,608
4,585,609
249 4,585,610
260 4,585,611
4,585,612
4,585,613
434 4,585,614
442 4,585,615
4,585,616

CLASS 377

10 4,586,190

CLASS 381

24 4,586,192
31 4,586,191
51 4,586,193
60 4,586,194
92 4,586,195

CLASS 384

98 4,585,359

CLASS 400

63 4,585,360
124 4,585,361
697.1 4,585,362

CLASS 401

6 4,585,363
195 4,585,364

CLASS 403

6 4,585,365
21 4,585,366
104 4,585,367
266 4,585,368
322 4,585,369
334 4,585,370

CLASS 405

153 4,585,371
159 4,585,372
224 4,585,373
227 4,585,374

CLASS 407

114 4,585,375

CLASS 408

110 4,585,376

CLASS 409

2 4,585,377
67 4,585,378
147 4,585,379
234 4,585,380

CLASS 410

154 4,585,381

CLASS 411

34 4,585,382
38 4,585,383

CLASS 414

139 4,585,384
311 4,585,385
403 4,585,386
730 4,585,387
735 4,585,388
752 4,585,389

CLASS 415

160 4,585,390
210 4,585,391

CLASS 416

114 4,585,392
134 A 4,585,393
138 4,585,394
223 A 4,585,395
241 B 4,585,396

CLASS 417

63 4,585,397
367 4,585,398
477 4,585,399
540 4,585,400

CLASS 418

5 4,585,401
55 4,585,402
4,585,403
61 R 4,585,404

CLASS 419

5 4,585,617
12 4,585,618
28 4,585,619

CLASS 420

442 4,585,620
579 4,585,621

CLASS 422

50 4,585,622
57 4,585,623
305 4,585,624

CLASS 423

2 4,585,626
6 4,585,627
22 4,585,628
167 4,585,629
234 4,585,630
235 4,585,631
236 4,585,625
239 4,585,632
242 4,585,633
260 4,585,634
263 4,585,635
321 S 4,585,636
328 4,585,637
4,585,638
4,585,639
329 4,585,640
331 4,585,641
333 4,585,642
342 4,585,643
450 4,585,644
625 4,585,645
648 R 4,585,646

CLASS 424

45 4,585,647
49 4,585,648
4,585,649
73 4,585,650
83 4,585,652
88 4,585,651
98 4,585,653
101 4,585,654
195.1 4,585,656

CLASS 425

18 4,585,405
113 4,585,406
114 4,585,407
171 4,585,408
525 Re.32,129

CLASS 426

106 4,585,655
285 4,585,657
303 4,585,658
332 4,585,659
438 4,585,660
520 4,585,661
534 4,585,662
535 4,585,663
619 4,585,664
634 4,585,665

CLASS 427

2 4,585,666
4,585,667
38 4,585,668
54.1 4,585,669
4,585,670
4,585,671
88 4,585,672
213 4,585,673
255 4,585,674
376.2 4,585,675

CLASS 428

5 4,585,676
26 4,585,677
33 4,585,678
35 4,585,679
36 4,585,680
4,585,681
57 4,585,682
71 4,585,683
79 4,585,684
143 4,585,685
172 4,585,686
195 4,585,687
200 4,585,688
215 Re.32,131
216 4,585,689
304.4 4,585,690
311.1 4,585,691
317.9 4,585,692
324 4,585,693
355 4,585,694
364 4,585,695
375 4,585,696
403 4,585,697
413 4,585,698
418 4,585,699
419 4,585,700
421 4,585,701
425.9 4,585,702
446 4,585,703
4,585,704
447 4,585,705
619 4,585,707
620 4,585,706

CLASS 429

17 4,585,708
19 4,585,709
27 4,585,710
42 4,585,711
50 4,585,712
112 4,585,713
193 4,585,714
194 4,585,715
206 4,585,716
213 4,585,717
224 4,585,718

CLASS 430

57 4,585,720
59 4,585,719
84 4,585,721
106 4,585,723
201 4,585,722
213 4,585,724
232 4,585,725
281 4,585,726
312 4,585,727
372 4,585,728
502 4,585,729
527 4,585,730
543 4,585,731
558 4,585,732
569 4,585,733
619 4,585,734

CLASS 431

346 4,585,409
350 4,585,410

CLASS 432

11 4,585,411
148 4,585,412

CLASS 433

8 4,585,413
20 4,585,414
80 4,585,415
140 4,585,416
202.1 4,585,417

CLASS 434

20 4,585,418
189 4,585,419

CLASS 435

2 4,585,735
6 4,585,736
126 4,585,737
176 4,585,738
253 4,585,739

CLASS 436

537 4,585,740
542 4,585,741
548 4,585,742

CLASS 441

69 4,585,420

CLASS 445

7 4,585,421

CLASS 446

106 4,585,422
230 4,585,423
295 4,585,424
327 4,585,425
428 4,585,426

CLASS 464

67 4,585,427
68 4,585,428

CLASS 474

12 4,585,429
4,585,430
94 4,585,431

CLASS 493

59 4,585,432

CLASS 494

20 4,585,433
4,585,434

CLASS 501

108 4,585,743
135 4,585,744
4,585,745

CLASS 502

62 4,585,746
4,585,747
66 4,585,748
107 4,585,749
159 4,585,750
211 4,585,751
314 4,585,752
401 4,585,753

CLASS 514

8 4,585,754
11 4,585,755
12 4,585,756
18 4,585,757
19 4,585,758
29 4,585,759
34 4,585,760
43 4,585,761
129 4,585,762
141 4,585,763
163 4,585,764
172 4,585,765
180 4,585,766
210 4,585,767
211 4,585,768
212 4,585,769
214 4,585,770
220 4,585,771
229 4,585,772
253 4,585,773
255 4,585,774
287 4,585,775
302 4,585,776
317 4,585,777
326 4,585,778
336 4,585,779
348 4,585,780
370 4,585,781
396 4,585,782
408 4,585,783
423 4,585,784
425 4,585,785
432 4,585,786
434 4,585,794
445 4,585,787
450 4,585,788
461 4,585,789
471 4,585,790
4,585,791
474 4,585,792
513 4,585,793
558 4,585,795
620 4,585,796
773 4,585,797

CLASS 518

715 4,585,798
717 4,585,799

CLASS 521

31 4,585,800
46 4,585,801
92 4,585,802
105 4,585,803
128 4,585,804
129 4,585,805
166 4,585,806
167 4,585,807

CLASS 522

31 4,585,534
116 4,585,808

CLASS 523

139 4,585,809
175 4,585,810
206 4,585,811
221 4,585,812
409 4,585,813
416 4,585,814

CLASS 524

23 4,585,815

CLASSIFICATION OF PATENTS

68	4,585,816
108	4,585,817
120	4,585,818
196	4,585,819
232	4,585,820
425	4,585,821
443	4,585,822
456	4,585,823
494	4,585,824
504	4,585,825
534	4,585,826
598	4,585,827
604	4,585,828
714	4,585,829
862	4,585,830
CLASS 525	
31	4,585,831
71	4,585,832
260	4,585,833
342	4,585,834
430	4,585,835
477	4,585,836
506	4,585,837
507	4,585,838
CLASS 526	
62	4,585,842
63	4,585,843
84	4,585,844
114	4,585,839
159	4,585,840
240	4,585,841
	4,585,845
264	4,585,846
271	4,585,847
CLASS 528	
15	4,585,848
17	4,585,849
122	4,585,850
176	4,585,851
185	4,585,852
227	4,585,853
295	4,585,854
322	4,585,855
388	4,585,856
CLASS 534	
587	4,585,857
CLASS 536	
4.1	4,585,858
6.4	4,585,859
CLASS 544	
22	4,585,860
182	4,585,861
319	4,585,862
	4,585,863
CLASS 546	
14	4,585,864
112	4,585,865
129	4,585,866
153	4,585,867
165	4,585,868
187	4,585,869
272	4,585,874
302	4,585,870
345	4,585,871
CLASS 548	
128	4,585,872
130	4,585,873
156	4,585,875
423	4,585,876
432	4,585,877
453	4,585,878
491	4,585,879
501	4,585,880
544	4,585,881
CLASS 556	
38	4,585,882
42	4,585,883
413	4,585,884
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204	4,585,891
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499	4,585,893
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403	4,585,896
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106	4,585,437
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	405	283,558
	427	283,559
D3—	33	283,560
	74	283,561
D6—	334	283,562
	338	283,563
	339	283,564
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	368	283,566
	386	283,567
	429	283,568
	449	283,569
	464	283,570
	470	283,571
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	519	283,573
	522	283,574
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	540	283,576
	587	283,577
D7—	70	283,578
	102	283,579
	137	283,580
	302	283,581
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	303	283,583
	317	283,584
	319	283,585
		283,586
		283,587
	332	283,588
	347	283,589
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	349	283,594
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	390	283,597
	405	283,598
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		283,602
D12—	90	283,603
	110	283,604
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	111	283,606
	140	283,607
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	147	283,609
	156	283,610
	191	283,611
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D14—	5	283,613
	54	283,614
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		283,617
		283,618
	61	283,619
	62	283,620
D15—	5	283,621
	123	283,622
		283,623
D16—	10	283,624
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	102	283,626
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	194	283,636
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	27	283,642
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	139	283,648
D28—	2	283,649
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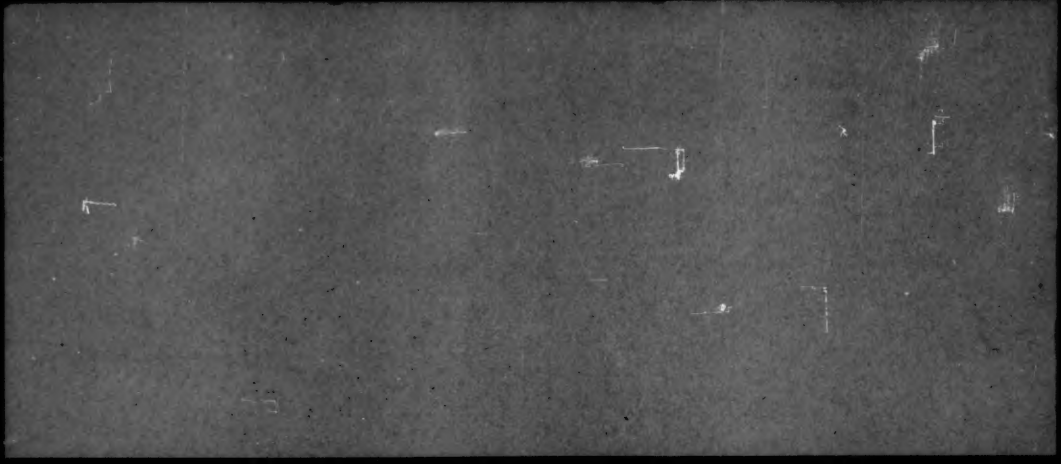

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